Minnesota Medicine

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SYMPOSIUM ON CORTISONE AND ACTH

Introduction

HOWARD F. POLLEY, M.D.
Rochester, Minnesota

IT has been said that we have been in a new era of medicine since the effects of cortisone and adrenocorticotropic hormone (ACTH) on rheumatoid arthritis were first reported slightly more than two years ago.[1] If this be so, the new era is certainly a most complicated one and much remains to be learned in it. The broad but nonetheless limited scope of the effects of cortisone and ACTH will become apparent in the course of this program.

The structure of ACTH, possibly a protein substance, is not yet established. The basic chemical structure of cortisone—the grouping of the rings A, B, C and D—is known as the phenanthrene nucleus (Fig. 1). This nucleus also is the basis of certain other steroidal substances and hormones. One of the most important keypoints in this structure is the carbon atom at position 11 (C-11) to which, in the case of cortisone, a double-bond oxygen group is attached. Hence, the term "C-11 oxysteroids" is sometimes used to describe cortisone and closely related steroids with an oxygen atom at this position in the structure. The only alteration at C-11 now known which seemingly does not interfere with antirheumatic activity of the substance is a minor switch from a double-bond oxygen group to an OH or hydroxyl group. With an OH group at C-11, this structure becomes compound F or hydrocortisone. You may later hear more about this hormone, which is still under investigation.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

Read in Symposium on Cortisone and ACTH at the meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 30, 1951.

Any other alteration at C-11 or at C-17, where the characteristic side chain is attached, or at C-3 or C-4-5 apparently renders enough structural

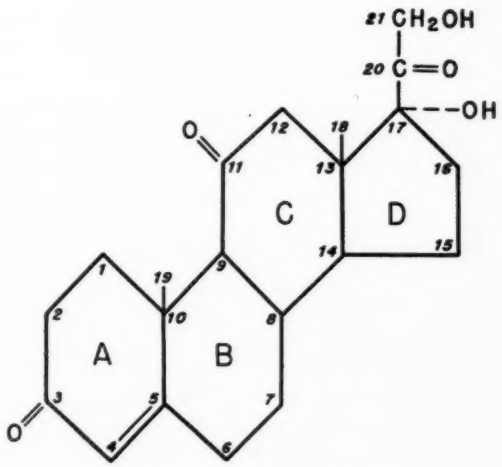

Fig. 1. Structural formula for cortisone. Location of the carbon atoms of the steroid nucleus and side chains are indicated numerically, and rings are indicated alphabetically. Cortisone acetate differs from cortisone only by the substitution of the acetate radical (OAc) for one of the hydrogen atoms at carbon 21 (-CH_2OAc instead of -CH_2OH). Presence or absence of the acetate radical at this position was found not to be an influencing factor in antirheumatic activity of cortisone. [Reprinted from J.A.M.A.[2]]

variation so that the resultant substance is antirheumatically, if not physiologically, inactive.[2] At present there is no clinically available steroid "substitute" for cortisone, nor is there a hormonal equivalent for ACTH.

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THE USE OF CORTISONE AND ACTH IN THE MANAGEMENT OF SEVERE BRONCHIAL ASTHMA AND NASAL ALLERGY

GILES A. KOELSCHE, M.D., CHARLES K. MAYTUM, M.D., LOUIS E. PRICKMAN, M.D., HADDON M. CARRYER, M.D., and GUSTAVUS A. PETERS, M.D.

Rochester, Minnesota

DURING the past two years, we have treated thirty-five patients suffering from bronchial asthma or nasal allergy or both with cortisone or ACTH. Nine patients had, and were treated for, both conditions, in some instances simultaneously. The results of the studies on each condition will be summarized briefly.

Twelve of the thirty-five patients, ranging in age from twenty-six to sixty years, were afflicted with hay fever or vasomotor rhinitis. The cortisone was given intramuscularly or orally in doses of 50 to 200 mg. daily for seven to twenty-one days. The ACTH was given in varying doses, which did not exceed 25 mg. every six hours, for two to fifteen days.

Seven patients were afflicted with hay fever. Six were given cortisone and two, ACTH. One patient received both on different occasions. The hay fever was well developed before the medication was started. Moderate to marked symptomatic relief which was confined to the period during which cortisone was administered was noted in five cases. One patient noted little if any relief, we believe because of inadequate dosage. Of the two who received ACTH, one was remarkably relieved by each of two courses of treatment ten days apart and of forty-eight hours' duration each. The other patient noted slight to moderate symptomatic relief after the second and third of a series of three courses of treatment given at intervals of five days.

Five patients were afflicted with vasomotor rhinitis. Three were given ACTH and two, cortisone. All of these reported marked symptomatic relief which continued for a few days to five weeks after medication had been discontinued. Nasal polyps were observed to shrink to 50 per cent of their original size while patients were receiving these hormones.

Read at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 30, 1951.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

Thirty-two patients, ranging in age from nineteen to sixty-nine years, afflicted with bronchial asthma were treated with cortisone or ACTH. Twenty-seven of these had severe nonseasonal asthma, whereas five had only seasonal asthma associated with hay fever of the fall type due to sensitivity to pollen of ragweed.

The total dose of cortisone per patient ranged from 500 mg. to 15 gm. and was given over periods varying from five to 216 days. The amount of ACTH per patient ranged from 140 to 2,825 mg. and was given over periods varying from three to 180 days.

Most of the patients to whom the maximal amounts of the hormones were given were receiving them primarily for rheumatoid arthritis or periarteritis nodosa. The asthma was an associated condition of secondary importance although in some instances causing real and constant distress.

Of twenty-seven patients who had severe nonseasonal asthma, seventeen received cortisone and fourteen ACTH. As the figures indicate, four patients were treated with both hormones on different occasions. The duration of the asthma was as long as forty-one years in one instance. Four patients had been disabled completely for as long as three years. Of the fourteen patients who received ACTH, all noted symptomatic improvement in from six hours to a few days after the injections were started and thirteen obtained moderate to complete symptomatic relief for three to five weeks after the injections had been discontinued. In one case only were the results difficult to appraise, although the patient claimed moderate relief. Of the seventeen patients who received cortisone orally or by injection, fourteen experienced moderate to complete symptomatic relief. Improvement was noted two to four days after the medication was started, and the relief ultimately noted would last three weeks to two months after the use of the hormone was discontinued. Of the three patients who had no

benefit, one had severe emphysema, and the other two received doses which in retrospect seem inadequate. Two patients who had severe nonseasonal asthma went through major surgical procedures without incident after their asthma was controlled. No correlation was noted between the results of treatment with hormones and the tests for cutaneous sensitivity.

The five patients with seasonal asthma associated with fall hay fever had had recurrent trouble for eight to twenty-four years. Four patients were treated with cortisone and two with ACTH. One patient, as is evident, was treated with both hormones on different occasions. The asthma of four patients having hay fever disappeared within twenty-four to forty-eight hours after treatment with cortisone was started and did not recur as long as treatment with the hormone was continued. It would recur, however, if administration of the hormone was discontinued before the hay fever season was over. Of the two patients given ACTH, one who had previously had seasonal asthma with hay fever for twenty years had none from the time administration of ACTH was started. The other one who had had seasonal asthma for twenty-four years continued to have sporadic nondisabling attacks despite the injections of ACTH.

Summary and Comments

The administration of cortisone and ACTH to our patients afflicted with severe bronchial asthma or nasal allergy or both has been followed by appreciable symptomatic relief in most instances. The duration of this beneficial effect has varied from a few days to eight weeks after use of the hormones was discontinued. The mechanism by which these substances ameliorate the symptoms of bronchial asthma and nasal allergy is not established but it may be related to the known antihyaluronidase effect of 17-hydroxy-11-dehydrocorticosterone.

The administration of cortisone and ACTH in the dosage and for the duration employed has not been followed by any undesirable symptoms or manifestations.

We believe, therefore, that these substances, although possessed of no demonstrable curative value, have a place in the symptomatic treatment of patients afflicted with severe bronchial asthma or nasal allergy who have not responded well to other orthodox therapeutic measures.

SYMPOSIUM ON CORTISONE AND ACTH

Introduction

(Continued from Page 849)

At this stage of clinical experience it is difficult to be concise and brief concerning the optimal method of using cortisone and ACTH in various diseases. Suffice it to say here that doses of cortisone and ACTH need to be carefully tailored not only to the individual patient but also to the varying requirements of the different diseases for which the hormones may be used. The great value of administering the hormone early in the course of a disease will be emphasized by the experiences to be related by members of this panel.

Though of different origin and structure, cortisone and ACTH have similar if not identical effects on the nonhormonal diseases for which they have been used. Hence, in a decision regarding choice of hormone to use, factors of cost, availability and ease of administration may be considered.

A dosage schedule based merely on casual or superficial consideration of the varying requirements may lead to unsatisfactory if not disappointing results. The disadvantages of overdosage are important and have perhaps not yet been fully appreciated.

Anyone who intends to administer cortisone or ACTH should first acquire as much information as possible regarding the potentialities of these hormones. The participants in this symposium hope they may be of help in this regard.

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EFFECTS OF CORTISONE AND ACTH ON PERIARTERITIS NODOSA

RICHARD M. SHICK, M.D., ARCHIE H. BAGGENSTOSS, M.D., BENJAMIN F. FULLER, M.D., and HOWARD F. POLLEY, M.D.
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UNTIL recently there has been no known definitive therapy which either prevents periarteritis nodosa[6,11,12] or affects its course. It has been reported that sulfonamide compounds have effected a cure in some cases,[4] but in our experience neither the sulfonamides nor the antibiotics have been of any apparent value. The possibility that in some cases periarteritis nodosa may be due to hypersensitivity has suggested the use of the antihistaminic drugs.[8,10] Although our results with the use of these drugs in a small group of cases have not been impressive, this type of treatment probably warrants further trial.

Berthrong and his colleagues[3] have shown experimentally that ACTH may prevent vascular lesions which otherwise would appear after sensitization. Marked clinical improvement in a single case of periarteritis nodosa during administration of ACTH has been reported by Goldman and co-workers.[5] Stillman[13] commented briefly on one patient with periarteritis nodosa who responded dramatically to ACTH but showed evidence of partial relapse after treatment was discontinued.

Materials and Methods

In the present clinical study, cortisone or ACTH or both were administered to thirteen patients who had periarteritis nodosa. There were nine men and four women, ranging in age from thirty-four to sixty-nine years. Duration of symptoms prior to treatment varied from three weeks to ten months. Clinical diagnoses were confirmed histologically by biopsy in all cases.

Dosage of cortisone varied, depending on clinical and biochemical response and results of follow-up biopsy. In some cases treatment was continuous, and in others it was interrupted. The following dosage schedule was employed in the majority of cases: 300 mg. of cortisone were given the first day and 150 to 200 mg. daily thereafter for six weeks, after which the dosage was gradually tapered off. Dosage and duration of administration of ACTH were of necessity limited because of a current shortage of the drug.

Biopsy was repeated at intervals in the course of treatment and as long as seven months thereafter. In two cases, necropsy was performed twelve and twenty-two days respectively after withdrawal of cortisone.. In the remaining eleven cases, follow-up studies or reports were obtained one to fifteen months after treatment.

Results

All patients experienced prompt and usually dramatic subjective relief after institution of hormone therapy. In most cases, fever subsided within twenty-four to seventy-two hours, whereas sedimentation rates decreased to normal or nearly normal more gradually. Partial clinical relapses occurred in some cases after withdrawal of the drugs, but improvement followed when treatment was resumed. The majority of patients were critically ill when treatment was started. Despite initial improvement, two died in cardiorenal failure. One patient has required continuous suppressive therapy with cortisone because of previous relapses following withdrawal of the drugs. The disease of the remaining ten patients apparently was in remission when they were last observed one to fifteen months after treatment, although evidence of residual vascular damage had persisted in most instances.

The two patients who died were observed for eleven weeks and five months, respectively. One received a total of 3.6 gm. and the other a total of 13.4 gm. of cortisone. At necropsy, evidence of complete healing of all arterial lesions was found. In the process of healing, however, fibrous obliteration of the lumina of the involved vessels had occurred, resulting in a widespread visceral infarction.[2]

Some rounding of facial contour, with or without mild acne, developed in all patients during treatment, but disappeared after withdrawal of the hormones. Profound disturbances of plasma

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Read in Symposium on Cortisone and ACTH at the meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 30, 1951.

electrolytes, which occurred preterminally in the two patients who died, were not observed in the other cases. In both cases the adrenal cortices had undergone moderate atrophy and their lipoid content was decreased. Bronchopneumonia, which developed in two cases during hormone therapy, responded favorably to the use of antibiotics. Delayed healing of biopsy incisions was not observed in any of the cases.

Comment

It is important to bear in mind that periarteritis nodosa is not invariably an acutely fatal disease. The course may be chronic, characterized by periods of remission and exacerbation, and rarely recovery may occur. The permanence of recovery must be questioned unless a long-term follow-up study is made. Even then, clinical remission may not necessarily indicate histologic healing. Proof of the latter cannot be established by biopsy, since it is possible to examine only superficial vessels in a small area. Although these may give no evidence of the disease, in either active or healed phase, other vessels may be affected.

Certain clinical phenomena that followed the administration of cortisone and ACTH in these cases are worthy of note. They include (1) prompt subjective relief, (2) subsidence of fever in most cases within twenty-four to seventy-two hours, (3) gradual decrease of sedimentation rates, (4) partial relapses in some cases after withdrawal of the hormones, and (5) improvement in these cases after treatment was resumed.

Cases of periarteritis nodosa in which necropsy revealed no evidence of active inflammation in any of the vessels examined have been reported but are exceedingly rare.[1,7] The complete disappearance of all histologic signs of active inflammation in our two cases within three weeks and three months after biopsy had disclosed the presence of acute arteritis is a unique occurrence and difficult to interpret as coincidental.

Summary and Conclusions

Cortisone and ACTH apparently can induce clinical remissions in periarteritis nodosa and may alter the primary pathologic process effectively. Permanent remissions, however, remain to be demonstrated. Our impression is that treatment must be given early, before widespread vascular damage has occurred, and should be intensive and prolonged.

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ACUTE RHEUMATIC FEVER TREATED WITH CORTISONE AND ACTH

A Report on Fourteen Cases

HARRY L. SMITH, M.D., and ARLIE R. BARNES, M.D.
Rochester, Minnesota

FOURTEEN patients with acute rheumatic fever were treated with cortisone and adrenocorticotropic hormone (ACTH). Ten patients were treated with cortisone and four with ACTH. Eight of these patients were in their first attack of acute rheumatic fever and had had no previous damage to the heart valves or to the heart. Two patients were in their first attack but their conditions were complicated by rheumatic carditis. Four patients were having recurrent attacks, and two of these had evidence of previous damage to their heart valves.

In studying the effect of any agent on the course of a self-limiting disease such as rheumatic fever, one must take into account the stage in the course of the disease at which the drug is administered. In rheumatic fever the results of administering any effective agent will vary according to whether it is given to a patient early or late in the first attack or to a patient who has had previous attacks of the disease complicated by valvular injury or cardiac enlargement, or both. Furthermore, the results in acute rheumatic fever may vary, depending on the presence or absence of rheumatic carditis or of congestive heart failure.

The opinion is often expressed that unless cortisone and ACTH are effective weapons in the management of acute rheumatic myocarditis, their usefulness in rheumatic fever is open to serious doubt. Rheumatic myocarditis is encountered chiefly among patients who have recurrent attacks of rheumatic fever superimposed on hearts previously damaged by the disease. It is also encountered among patients with unusually severe rheumatic fever, and until now no effective method of suppressing the myocarditis in these patients has been known. If acute rheumatic fever did not produce acute myocarditis, acute endocarditis and eventually end in chronic endocarditis, it would not be a serious disease.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

Read in Symposium on Cortisone and ACTH at the meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 30, 1951.

Cortisone and ACTH controlled or suppressed the acute symptoms of acute rheumatic fever in all fourteen instances, and in some of the cases, most dramatically. The temperature returned to normal and the joints became symptom free in five days or less. Excluding those patients who had active myocarditis, heart rates returned to normal in about five days. The P-R intervals returned to normal on the average in three weeks or less. The sedimentation rates returned to normal in eighteen days in eleven of the fourteen cases. The hormones did not seem to cure the disease or shorten the duration of the acute rheumatic state. If administration of the hormones was discontinued before the disease had run its usual course, the acute symptoms often recurred.

To be most effective, it appeared that cortisone or ACTH should be given in adequate amounts early in the acute phase of the attack of rheumatic fever. Thereafter reduced amounts should be given continuously or in courses, until it can be established that the activity of the disease is at an end.

Ten patients in their first attack of acute rheumatic fever and one who was having a recurrent attack of rheumatic fever but who had no evidence of myocarditis prior to treatment with the hormone received cortisone or ACTH. Six of these patients, when re-examined at periods of one to fifteen months after their dismissal from the hospital, had no cardiac murmurs or evidence of cardiac enlargement. Two of these patients, subsequent to these re-examinations, have had recurrent attacks of rheumatic fever with appearance of murmurs and cardiac enlargement.

Five of the fourteen patients had clinical evidence of myocarditis before cortisone was administered. (Two were in their first attack.) It was our impression that the hormone exerted a favorable effect on acute myocarditis in these instances.

Observation of these fourteen patients over a much longer period will be required to determine

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SYMPOSIUM ON CORTISONE AND ACTH

Summary

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INVESTIGATION of the therapeutic value of cortisone and ACTH has opened new realms for clinical and laboratory investigation. Undoubtedly, current concepts of the therapeutic usefulness of these hormones will be modified with further experience. For the present, the nonhormonal diseases for which cortisone and ACTH offer greatest promise are those described as conditions resulting from tissue reactions of hypersensitivity or allergic disorders. Special emphasis should be made of acute rheumatic fever and inflammatory ocular diseases, which have great social and economic importance. Asthma, hay fever, drug sensitivities, rheumatoid arthritis and conditions resulting in states of physiologic shock also warrant emphasis.

Cortisone and ACTH are powerful agents, both physiologically and pharmacologically, but they modify, not cure, the diseases on which they have beneficial effects. These hormones affect the reversible tissue reactions, not the irreversible residues of the susceptible disease.[1] It is apparent, therefore, that the hormone must be given early in the course of the disease if it is to be optimally effective. Misusing these hormones in the late stages of otherwise susceptible diseases must be carefully avoided. Furthermore, discriminate use of cortisone and ACTH would lead to increased availability of the hormones for patients for whom they would be of most value.

It must be remembered that the potentialities of cortisone and ACTH include the masking of the signs of intercurrent infections and other disease, for example, pneumonia, acute appendicitis, ruptured abdominal viscera and so forth. Thus careful observation of the patient's physical condition is of added importance. The concomitant use of appropriate antibiotics or other treatment may be indicated on occasion.

The mechanism of action of cortisone and ACTH remains unknown.[1] Perhaps it is simply a matter of supplying extra adrenal hormone to protect susceptible tissues from a wide variety of irritants.

The presently available information concerning effects of cortisone and ACTH certainly suggests that it may be essential to avoid or keep at a minimum the state of hormonal excess. This is best accomplished by constantly using minimally effective doses of either hormone. Such a plan is especially important in the treatment of chronic disease. In active rheumatoid arthritis, for example, doses of cortisone in the range of about 50 mg. per day may suffice for adequate control of the reversible part of the inflammatory reactions.[2] Such doses are less than those often recommended, but they may be more suitable when long-term administration is indicated. In a more fulminating, acute inflammatory process, such as acute rheumatic fever, on the other hand, larger doses of about 200 mg. of cortisone daily are sometimes needed, especially in early stages of the acute disease. Dosage thus is determined, in part at least, by the varying degree of active inflammatory reactions of different diseases, but also even by the variations of the same disease from time to time. Hence, it must be expected that dosage requirements of cortisone or ACTH may need to be modified either slightly or greatly from time to time.

The management of diseases benefited by cortisone and ACTH is not yet a simple procedure. In most instances at this time hormone therapy will not entirely supplant measures which have proved to be valuable prior to introduction of these hormones. However, with further experience the determination of optimal methods of using these potent hormones may be anticipated.

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DIAGNOSTIC PITFALLS IN CARDIOLOGY

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IT is a common fate for the specialist to have difficult diagnostic problems reserved for him, but the important original screening of such patients falls in the field of general practice. It is, therefore, vital for the general practitioner to be alert to the pitfalls of diagnosis. In the field of cardiology, these are many and they are as common in the subjective as in the objective aspects of a cardiac case. An example of this is the diagnosis of angina pectoris, which is not made by any type of physical or laboratory examination but only by what the patient tells you himself. That is why it is so important for the physician to take the history himself and not to delegate it to an assistant or a technician.

Let us consider first some of the features of the history and of the symptoms of which the patient complains. The two major types of heart disease in which the etiologic background is important are rheumatic and syphilitic heart disease, but it is not uncommon in my experience to be able to dig out a history of these infections only after I have discovered mitral stenosis or aortic regurgitation. This is an example of the value of returning again to the history of the patient after the physical signs have revealed the true pathologic condition.

One of the commonest symptoms is that of shortness of breath, and it is not always easy to differentiate dyspnea on effort from the sensation of cutting off of the breath, characteristic of angina pectoris in those patients in whom the complaint of pain is not prominent. However, if you ask the patient whether or not he puffs after exertion, his affirmative answer would favor real dyspnea as the complaint.

I believe it is always wise to approach a cardiac problem as if it were probably not one of heart disease. In this way, one keeps in mind other causes of shortness of breath. Important ones are anemia, obesity, tobacco, primary pulmonary fibrosis and emphysema. Again, if one asks a patient who is obviously in no distress if he or she is short of breath, and the reply is "terribly," one can generally assume that this is an instance of the deep sighing respiration of anxiety. The history will further reveal that the patient complains of difficulty in getting a deep breath, not related to effort and coming particularly when the individual is under nervous strain. Many of you may have had this sensation yourselves. It is one in which respiration comes into consciousness, and it seems impossible to get a satisfactory breath until several trys have been made and one gets over the crest of the hill. There is relief for a variable time thereafter and the sensation then recurs. I generally am considerably reassured from hearing such a story and, in turn, reassurance of the patient is very helpful in therapy. I have, at times, thought that coramine by mouth helped this symptom, but patients of this sort tend to be very suggestible and they might have reacted to a placebo.

I do not intend to discuss all the conditions which have masqueraded as heart disease. Many of these have succumbed to more extensive electrocardiographic study. Herrick, for example, in 1935 described thirty-five conditions which he had seen confused with coronary occlusion. At the present time, coronary disease is so common that it is usually the first thing thought of when the patient has chest pain. Fortunately, very few patients with coronary thrombosis are now operated on because of a diagnosis of an abdominal condition requiring surgery. However, I would like to make a few comments on pain.

The first of these is that it is not always recognized that the pain of angina pectoris and coronary occlusion may be confined to the back of the chest. One should always think of the possibility of dissecting aortic aneurysm, but I have definite examples of myocardial infarction with back pain.

The shoulder-arm syndrome pain following myocardial infarction should always be remembered because the continuation of pain in the left shoulder and arm may be interpreted both by the physician and the patient as a continuance of the destruction in the heart muscle. Again, reassurance and physiotherapeutic measures are very heartening to the patient.

I have seen a rare instance of gallstone pain re-

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lated to effort. I have in mind a young woman with this type of pain with a multitude of small stones in the gall bladder and, on several occasions, effort such as lifting her baby squeezed these small stones into the cystic duct.

In young people, particularly after respiratory infections, the sudden onset of chest pain should always bring up the possibility of nonspecific pericarditis, the differential diagnosis of which is usually relatively easy with serial electrocardiograms. The prognosis, as shown by fifty such cases which we have studied and followed up to twenty years after the attack, has been uniformly good.

Other confusing causes of pain are hiatus hernia, esophageal ulcer, the scalenus anticus syndrome, superior pulmonary sulcus tumor, and spinal metastases. By far the commonest type of chest pain which I see, except for angina pectoris, is that which I group as orthopedic and due to radicular irritation. Such pain is usually over the precordium, may be very severe, and may be relieved or produced by change in position. It is often associated with tenderness in the region. The pain may be sharp or dull, transient, or persistent for hours. It occurs in all sorts of fatigued individuals and responds to local heat and heat over the spine.

Collapse or syncope is often difficult to evaluate. One should try cautious carotid sinus stimulation in such patients to see if this may be the mechanism of the attack. It is well to remember that paroxysmal heart block can occur as a cause of syncope even in those individuals who have normal A-V conduction by electrocardiogram between the attacks. Rapid tachycardias can produce syncope as in paroxysmal auricular or ventricular tachycardia and paroxysmal auricular fibrillation of a benign type can mimic coronary occlusion by producing pain and collapse. In all these arrhythmias, after return to normal conduction, there may be transient electrocardiographic changes which we must not over-interpret in the absence of other evidence of organic heart disease. A patient with paroxysmal tachycardia may be labeled neurotic if the attacks are short and he is not seen by a physician during one. A patient whom I saw recently complained of great discomfort due to a slow, heavy heart beat. I was able to observe him with this and found that he was having regular bigeminy and not heart block, and he was cured with quinidine.

In 1946, Dr. Walter Alvarez published a paper on "Cerebral Arteriosclerosis with Small, Commonly Unrecognized Apoplexies." This paper is well worth reading. Dr. Alvarez pointed out that these minor cerebral attacks with collapse followed by persistent lowering of the blood pressure were, at times, confused with coronary thrombosis. I have had occasion to confirm these observations, and we should be careful not to miss the diagnosis.

Signs

Simple sinus tachycardia is, at times, difficult to explain. Anxiety, infection, anemia, drugs such as benzedrine and thyroid, thyrotoxicosis and as a sequela of heat stroke may be cited as instances. It may, of course, be a sign of an active process in the myocardium or of an early stage of cardiac failure. In a few cases that I have followed for many years I have been unable to explain the constant tendency to simple tachycardia. I could only assume some deep-seated anxiety or frustration which my psychiatric friends were unable to discover.

Edema.—Edema of the legs is more common in non-cardiac than in cardiac conditions. Varicose veins or causes of local lymph stasis are more frequent than heart failure. The association with ascites should always bring constrictive pericarditis to mind. This is especially true if the patient is not orthopneic.

Cyanosis.—This may be due to veno-arterial shunts in congenital heart disease or heart failure, but I have seen it with arteriovenous communications in the lungs, paroxysmal methemoglobinemia, and even confused with argyria in a child, from the continuous use of argyrol nose drops.

Cardiac enlargement is, of course, most common in cases of valvular disease or hypertension. Do not forget, however, both myxedema and hyperthyroidism, particularly in older individuals, arteriovenous aneurysms, anemia, vitamin deficiencies, and occasionally following virus infections and sensitization with sulfonamides. Remember also that there are still a few examples of cardiac enlargement of unknown origin. We see a few of these every year and even at autopsy the pathologist is unable to explain the mechanism. Dilatation is preponderant and often more in the right ventricle.

This may be as good a place as any for a few comments on the limitations of x-ray examination of the heart. Many radiographers are willing to admit the difficulty of determining whether it is the right or left ventricle which is enlarged. This, of course, is particularly true in children, and in these instances the electrocardiograph is a more discriminating instrument.

The performance of a Valsalva experiment voluntarily or unconsciously may produce very marked reduction in heart size. A high diaphragm and obesity often give a false impression of cardiac enlargement, as does the pericardial apical fat tab. It is less well recognized that such extracardiac accumulations of fat may occur on the right side of the heart as well as the left. In the diagnosis of mitral stenosis, it is well to recall that in many of these cases the transverse diameter of the heart is not increased and there may not be any more prominence of the upper left border than appears in some normal vertical hearts. Prominent pulmonary arcs are not always due to mitral stenosis, congenital heart disease, nor cor pulmonale from long-standing pulmonary disease. For example, they may be found in congenital pulmonary endarteritis in children, causing pulmonary hypertension.

Extraordinary distortion of the cardiac silhouette may be produced by funnel chest causing apparent enlargement in an anteroposterior view which will show on lateral views a much flattened heart shape. Auscultatory signs are also very confusing in these cases.

Another pitfall lies in the right sided aorta passing posterior to the esophagus. In other words, organic heart disease may be both overdiagnosed and underdiagnosed by the x-ray.

Auscultation.—This brings me to my favorite subject, namely, auscultation, because in the diagnosis of mitral stenosis, for example, one may generally throw away all diagnostic aids except the stethoscope, but I will admit that phonocardiography has had a humbling influence as regards dogmatic statements about auscultation. However, for some thirty years at our clinic at the Massachusetts General Hospital under the influence of Paul D. White, we have emphasized the necessity for listening to all hearts with both the open bell and the diaphragm type of stethoscope. It was for that reason that twenty-five years ago I devised the stethoscope with the combined chest pieces connected with a valve making it easier to perform these examinations. Let me say that in addition to whatever method of auscultation you use the following areas should be explored: (1) the cardiac apex with the open bell stethoscope lightly applied with the patient in the left lateral position, (2) the left sternal border with the breath held by both the patient and the examiner, (3) over the back, (4) over the clavicles in children, (5) the axillary regions because of the possibility of picking up congenital arteriovenous shunts in the lungs.

There are many complex auscultatory problems which we need not go into, but of the simple things I see the following most commonly missed:

1. Mitral stenosis with normal rhythm due to the failure to recognize the sharp character of the first heart sound. Often the diagnosis can be made by palpating the apex beat, and I have seen patients in whom I feel sure the diagnosis has been missed for over fifty years. I recently saw a woman in her middle fifties who had been considered only neurotic and a divorce from her husband had been recommended, but in whom the symptoms were clearly due to unrecognized mitral stenosis.

2. Mitral stenosis with auricular fibrillation in the terminal stages of congestive failure, cyanosis, and severe dyspnea. Such a patient is orthopneic with noisy breathing, and it is difficult to get the patient into the optimal position for auscultation and, therefore, no murmurs are heard. There is, however, right axis deviation in the electrocardiogram and a good first heart sound. The latter is the important point, namely, that the first heart sound is too good for this degree of heart failure. Very rarely this situation may turn out to be cor pulmonale, but it is far more commonly due to rheumatic heart disease with mitral stenosis.

3. Slight aortic regurgitation which can only be revealed by listening with the diaphragm stethoscope with the patient leaning forward at full expiration. Many young men with this lesion were undiagnosed and accepted for the Armed Services, partly because auscultation had to be carried out in induction centers in noisy rooms by inexpert observers.

4. Aortic stenosis, because of a failure to note the quality of the murmur, the diminution of the second heart sound and, at times, the greater intensity of the murmur either at the apex or at the

left sternal border rather than at the classical aortic area. I wish to emphasize that too much attention has been paid to the finding of a thrill in aortic stenosis. We have recently completed studies showing that the finding of a thrill adds no more to the accuracy of diagnosis than proper attention to the auscultatory findings. Naturally, in the presence of cardiac failure in terminal states the systolic murmur may be much diminished in intensity, and it is then that one must pay great attention to the marked diminution or disappearance of the aortic second sound as well as to the rather groaning characteristic of the murmur.

A very interesting pitfall in the differential diagnosis of aortic stenosis was revealed at a clinicopathological conference at the Massachusetts General Hospital last year where a rupture of an apparently normal chorda tendinaea of the mitral valve gave auscultatory findings that everyone agreed prior to autopsy were due to calcific aortic stenosis.

5. Gallop rhythm of slight degree, especially in relation to coronary occlusion during the acute stage or during convalescence. After a patient with myocardial infarction is ambulatory, mild exercise may be tried to bring out a latent gallop rhythm which I believe is very important in prognosis as indicating a poorly functioning myocardium. I recently saw a patient who had only slight gallop rhythm and equivocal electrocardiographic signs, but who died six days later and showed infarction of the whole heart, right and left ventricles and septum with occlusion of all the major coronary arteries.

6. The normal venous hum over the clavicles in children confused with patent ductus arteriosus. Such a murmur may be obliterated by pressure over the supraclavicular veins. It is, of course, very important that this differential diagnosis be made because of the practically routine indication nowadays for ligation of a patent ductus arteriosus. The same statement should be made about congenital heart disease in general, namely, that we cannot disregard accurate diagnosis of the lesions because of the great possibilities of cardiovascular surgery that are now opening up. At least, we should be able to select congenital cardiacs who should be submitted to further study, such as cardiac catheterization and angiocardiography.

I have emphasized particularly the importance of not missing the diagnosis of mitral stenosis because in this field also developments in surgery point to the probability that an increasing number of patients with mitral stenosis will be selected for surgical relief. I make it a rule that every patient with auricular fibrillation shall be assumed to have rheumatic heart disease with mitral stenosis until proved otherwise. This does not mean that we should miss cryptic thyrotoxicosis nor such rare conditions as myxoma of the auricle with a mitral diastolic murmur, but at the Massachusetts General Hospital in the years 1944 to 1949, we were able to study 115 patients with rheumatic heart disease in 1,025 autopsies of individuals dying of various diseases over the age of fifty, and it is a good thing to bear in mind that rheumatic heart disease can exist at any age.

There is one other curious auscultatory sign that you may run across. You may be called some day to see a patient whose heart may be heard beating with two or three loud sounds, across the room. This is rather terrifying to the patient and his family, but, in my experience, has been due to a benign, spontaneous, relatively localized pneumothorax with air in contact with the pericardium. Recovery without therapy, except rest, is the rule.

Electrocardiography

I have reserved for the end of this discussion a consideration of some of the pitfalls in electrocardiography. These concern largely the abnormalities in the T wave and ST segments. In 1941, I listed some forty conditions other than heart disease which altered the T waves. Since then, this list has been tremendously increased, although we are in the process of discovering factors common to many of these conditions which affect the electrocardiogram, particularly intracellular and extracellular electrolyte changes. Potassium is under the greatest scrutiny at present. However, these variations in the T waves such as flattening or inversion have too often been invoked to the point of developing cardiac neurosis in the patient. A few of the conditions recently observed to alter the electrocardiogram are eating, hypnosis, fright, acidosis, hyperventilation, hepatitis and spontaneous pneumothorax. Between 1941 and 1948, I collected from the *American Heart Journal* over 150 such references. This knowledge of the variability of the electrocardiogram in normals gives one pause. The situations

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SURGICAL TREATMENT OF VARICOSE VEINS

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AS of May 2, 1951, there is no cure for varicose veins. There is the possibility of mechanically improving the circulation to the extremities by the judicious use of procedures fitted to the pathologic picture of the return flow system individually encountered in the increasing number of humans so afflicted. There is also the possibility that by choice of the wrong procedure, or only halfway treatment, the condition may be unaltered, yes, even made worse. The doctor who undertakes the surgical attempt to improve the varicose patient should be aware that he is commencing a tedious, long, patience-tasking and often poorly appreciated struggle, that is only going to be successful inasmuch as it has been prepared for and inasmuch as it is carried through to its completion. There can be no compromise, and a patient prepared for the program to follow the initiation of care is a patient infinitely better readied for the rigorous job ahead. For this reason it is imperative that the first conference with the surgeon who is assuming the task be detailed and specific in outlining the limitations that are inherent in the therapy offered. The doctor who glibly states that he will cure the veins is either ignorant of what is possible, or else is worried that the patient will not be convinced of the efficacy of the treatment which, up to this time, is available.

If it is permissible in a presentation of this character to suggest that the economic picture is also a factor in the ultimate accomplishment, then I would cite the need of a concrete agreement in regard to a fee for the entire procedure. I believe that in this work the individual surgeon must set himself up as a one-man insurance company, and establish with his patient the over-all cost of the surgery and aftercare until the obliteration of the veins demonstrating altered physiology is realized, or as nearly so as surgically possible. Such a plan will obviate the disgruntled patient, half treated and without knowledge of how much to come, independently terminating the process and with the partly completed effort going forth to proclaim to any and all that the surgical therapy is not good.

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The frequency of failure of the current method of treatment of varicose veins is too well known to the laity to need emphasis to the profession. It is, therefore, necessary that the treatment be as thorough and painstaking as only one approaching the task with deliberate and dogged determination can make it. This, of course, decries the practice of making vein surgery an encore to other operative effort such as perineorrhaphies in which the mere ligation of the greater saphenous and a few or all of its tributaries at the saphenofemoral junction is hurriedly accomplished and no more. As a result, the patient, believing that he has had the ultimate in treatment of varicose veins, an operation, is discharged from the hospital and later becomes convinced that that operation for varicose veins is not much good.

The picture is not all gloom, however. The more recent study has helped to make it apparent that the chief features of varicose conditions considered from a physiological point of view are valve incompetence, raised venous pressure and edema. Probably the commonest primary defect is congenital inadequacy in one or more pairs of vein valves in the upper end of the long saphenous system. The familial tendency suggests congenital weakness. There are also those cases which must be ascribed to destruction of valves during thrombophlebitis, either superficial or deep, of the leg and thigh. In this latter type the damage is often widespread, making such patients difficult to treat satisfactorily. In the congenital weakness group mild incompetence during the years prior to adolescence may alter function thereafter. A generalized venous breakdown may be accelerated or precipitated by pelvic congestion (uterine enlargement in puberty or pregnancy, constipation, pelvic inflammatory disease, fibroids or other conditions), by prolonged standing or by occupations which involve repeated straining with raised abdominal tension. The fact that edema and ulcer are sometimes seen after all varicosities have been eliminated makes it apparent that sometimes the varicies are an effect rather than the cause of the disease. That the valves of the main trunk are not the only sources of difficulty is well

known. The incompetent perforator may be converted from a partial cause to the cause following incomplete therapy directed only to the main trunks. R. S. Sherman has certainly made an exhaustive study of communicators, and a careful study of his report should be mandatory for anyone attempting vein surgery. However, there is a point at which it becomes a procedure of decreasing return in benefit derived in the too prolonged and detailed ligation or stripping of smaller branches that are present in some cases. It is a product of experience that will allow one to strike a happy medium.

It seems that the knowledge that the greater saphenous usually courses between the layers of the deep fascia in the lower half of the thigh and receives a constant perforator at the junction of the middle and upper thirds of the thigh from the mid-Hunter's canal, a fairly constant branch from the medial genicular venous plexus and one from the subsartorial vein, is important. It is also a rather frequent finding to encounter still another perforator near the upper end of Hunter's canal. It can be picked up by the distal extension of the incision made to ligate the mid-Hunter canal perforator. The high vein is by no means as constant as the first three mentioned and it is easier to look for it from the higher incision and ligate it before proceeding to strip the long saphenous vein. In the lower leg the communicating veins connect the deep and superficial systems along the intramuscular septa and through the deep fascia. Their location is so variable that they cannot be well described, but about three quarters of them are antero-medial and the remaining one quarter about equally divided between a postero-lateral and antero-lateral distribution. It has been said that incompetency in the lower leg is less common than in the thigh, but of late this has not been too true in the patients I have had the opportunity to observe.

With regard to treatment, styles repeat. In 1845, when Francis Rynd introduced the hypodermic syringe, a flood of different solutions was released into varicosities. The treatments were vigorous, to say the least, and because of some of the bad results this treatment fell into disrepute. Ehrlich revived the procedure by proving that thrombus could be safe. The results obtained by hypertonic salt, sugar, foreign protein and various other organic materials were not lasting. Schiassi in Bologna in 1908 first used ligation and retrograde injection above the knee and Nobili, in 1921, carried this procedure more proximally to the groin. In 1930 de Takats introduced high ligation as an ambulatory procedure, and sodium morrhuate came into use the same year. High ligation and retrograde injection probably received its greatest refinement by Pratt in 1939 with his use of a ureteral catheter for injection. Early ambulation was again stressed, but hazards such as deep vein thrombus, hemorrhage, emboli and reactions to any drug were always present. Failures in high ligation and retrograde injection are attributed to incomplete operative management, inadequate injection, incompetent communicating vessels and recanalization. Stripping dates back to Hippocrates, who punctured varicose veins in 500 B.C., and to Galen, who tore them out with a hook in 180 A.D. In 680 Paulus Aeginata did a mid-thigh ligation and excision for varicose veins. Albucasis, around the 11th Century, treated varicies by multiple incisions in the thigh for ligation. In 1884 Madelung dissected out tortuous veins, and in 1905 Mayo's stripper for cutting the veins loose and tearing them out was employed. Keller and Babcock introduced different methods of stripping in the next two years following this, but complications in those days speedily reduced the popularity of the procedure. Hence again the swing was back to injection, then to ligation and injection, and the past six years is again witnessing a return to the popularity of stripping.

Now, facts are facts, and the bad complications in the early years of this century were the cause of a discontinuance of stripping. It is hard to arrive at a good explanation of why these complications are not occurring now. Of course antibiotics and anticoagulants are given credit, but they are not to me an entirely adequate reason. It is true that the complications do not apparently occur at the same rate, however. Stripping seems logical because it obviates the amazing power of recanalization inherent in veins. The removal of the veins should obviate this cause of failure. However, large clots also have the ability to recannulate even when not in veins. For this reason it has been with hesitation that large trunks with evident large incompetent perforators have been stripped hurriedly by a procedure that seems to be best described as a hauling out of the main trunk with as much of the communicators as will tear loose at the same time. In veins of this type results have been much more gratifying if on the

encountering of resistance in the slow, steady stripping motion, auxiliary incisions are made and communicators followed down quite close to their junction with the deep vein and there ligated. It is interesting that Sherman, in an attempt to reduce the amount of bleeding occurring with his multiple ligations, advocates the injection of a sclerosing agent into the long saphenous before proceeding with the dissection and ligations of the tributaries. Thus preparatory to stripping and multiple ligations of communicators, the criticism of sclerosing solutions causing deep thrombus is overlooked. Surely ligation or stripping will not in any way re-extract the sclerosant from the deep veins. It is apparent that arguments for and against ligation and retrograde sclerosis and stripping will continue. The situation demonstrated will best indicate the procedure required. If the greater saphenous is involved without gross evidence of large incompetent communicators, then a mere stripping of the trunk as involved seems logical. If there are large communicators, then a more detailed procedure would be better, in that stripping should be augmented by deep ligation of the large incompetent veins causing backflow from the deep to the superficial venous system. The stripping of veins is not an atraumatic procedure, and at the actual time of stripping it is advisable that the anesthetist be informed so that anesthesia may be deepened. A vagus effect of drop in blood pressure and bradycardia has been noted in some patients. These have been for the most part the type known as vagotonic. The precaution of elevating the foot of the table during ligation and stripping will undoubtedly reduce the amount of bleeding encountered. It also may backfire, and it is possible, and has been experienced, that a sucking of air can be effected into the veins of the lower extremities at the time of stripping. The aftercare of the patient, beyond that immediate period when pressure bandages, frequent walks, elevation of the legs when resting and other more or less standard procedures are quite routine, is worthy of some mention. Incidentally, the matter of elevation of the legs does not mean sitting in a chair with a footstool in front. A leg to be elevated must be above the heart and this entails lying down. Small veins that are of sufficient size to cause difficulty may be injected with sclerosing solution in the weeks following operation. The technique of airblock injection, as described by Orbach, has surely been pleasing in use. The technique of vein injection is truly a gadgeteer's delight, and everyone has his pet method. I have been an adherent of the two tourniquet method, one pneumatic tourniquet placed above and one below the segment to be injected. A tilting table has been most helpful. After the insertion of the needle and aspiration proving that it is in the lumen, the proximal tourniquet is deflated and the table tilted so as to make the legs high. With the vein empty the proximal tourniquet is again inflated, the distal tourniquet having remained inflated throughout. With the syringe at a lower level than the needle, approximately 1 to 1.5 centimeters of air is at the needle end of the syringe and is injected preceding the solution itself. I can only state that the resulting thrombus is smaller in calibre with less surrounding reaction. I believe that Orbach is accurate when he states that the spasm resulting has, in his hands, prevented the sclerosant getting through perforators into the deep vein. The resultant effect has been a remarkably painless local venous spasm with occlusion by intima concretion and not by thrombus organization. The solution itself can be vigorously shaken and injected as a foam to further augment this process. Most important, only a small quantity is used.

The more desirable sclerosant is surely one of the efficient surface active substances. The hypertonic solutions act by dehydration due to a hyperosmosis. They act slowly and are diffuse and not well circumscribed. They develop pycnosis which is somewhat reversible. Surface active agents are hypotonic, they act fast, they destroy the cells, are irreversible and do not diffuse, so the reaction is more localized. Sodium tetradecylsulfate has been by far the most effective and constant. The factor of certain intravenous introduction cannot be too much emphasized. This is truly a state where, when in doubt, do not proceed with caution; do not proceed. Many of the aggravating lesions of lower legs in patients treated for varicose veins are directly the result of extravenous injection. It is much better to send the patient home and have him return on another day than to take a chance. If extravasation does occur, a single stab wound and evacuation will afford great relief and speedier healing. However, the scar is there to forever bother the fastidious.

The post-thrombophlebitic patient with varicose veins is a subject in itself. This is the patient that warrants a venogram before any definitive treat-

ment. With evidence of incompetent valves in the femoral system, vigorous vein therapy will be futile as far as symptoms are concerned, and a popliteal ligation will often be the difference between a quite satisfactory result and failure. In fact, as the venogram becomes more frequently used and its technique more perfected, its utility will be more apparent and real. Interpretation is also somewhat primitive as yet, and only more frequent exposure of both the roentgenologist and the surgeon to technically more perfect radiographs will be productive of more accurate and specific understanding. In any case of retrograde flow of blood irrespective of the deep circulation, not only will no harm be done by ligation, but actually the usual benefit to the varicose veins from this treatment should be expected. Varicose veins do not forward venous blood against gravity. A collateral circulation by non-varicose veins must be established after deep thrombophlebitis, if the leg is not to be grossly congested.

No longer should heart disease and advanced arterial disease be deterrents to judicious irradication of inefficient veins. Greater care must be exercised and the period of completion of treatment greatly prolonged. Any degree of reflex arterial spasm that might follow venous trauma, such as the injection of a sclerosant, has the likelihood of being that which overbalances the arterial supply to a deficient state. This then dictates that the quantity of sclerosing agent be small. Any evidence of the onset of such arterial supply failure should be treated promptly by procaine lumbar sympathetic block.

In the past the false premise has been in order that a leg would be better off with too much venous blood than with no blood at all. In the capillary bed it is true that arterial and venous blood actually mingle with arterial blood at one end and venous blood at the other end of the capillary. Incompetent valves produce dilated veins with increased venous pressure and in turn this increased venous pressure is transmitted back even as far as the capillary loop. The resulting increased capillary bed pressure can then be the clinching cause of the inability of an already depleted arterial supply. Yes, the logic of decreasing peripheral resistance by improving venous return has proved itself and some gratifying improvements in arterial supply have been granted several intermittent claudication cripples. The patient with his new-found ability to walk longer distances then further improves his venous return, and here can be coined a new term: an anti-vicious circle is realized. To obviate arterial spasm as a worry in vein sclerosing in such cases, a patient already having had a lumbar sympathetic neurectomy, is a lesser trauma to the coronaries of the therapist.

The cardiac patient, no longer having a sluggish, sagging tube extending from his feet to his right atrium, is also improved to a degree by shortening these reluctant tributaries. Even if this is not a good explanation, he at least is not burdening his heart by dragging a fluid-overladened lower half along with him.

As to surgical therapy in the pregnant patient, I can only state that four patients aborting in the first twenty-four hours, three after ligation and retrograde injection, and one after ligation and stripping, have forever, I believe, put a dampening effect on my ardor for this surgery during said interlude. The forceful arguments of my obstetrical colleagues to the contrary, I will not do it. Much better, that all pregnant women, preferably, and absolutely those with familial histories wear elastic bandages, not stockings, from the first that they become aware of the fact until one month following delivery. Vanity should not be too much of a factor during pregnancy, and the use of the woefully inefficient elastic stocking because it looks nicer should never be countenanced. There just is no comparison in the poor way elastic stockings attempt to do what bandages do well.

Characteristically, stripping and multiple ligations will take longer in producing a good result, in that healing is more prolonged due to the greater trauma and the more complete and immediate shift of the venous load to the deep circulation. However, the results are more lasting. High ligations and retrograde injection will be more rapid in production of good results, but they are not so lasting.

No matter which type of treatment is employed, a preoperative verbal agreement should be extracted from the patient that he or she will report at least once in every six months for checkup. This is true even though there are a number who will not live up to their contract. A filing system that will initiate a reminder card once every six months is not too great a burden on the surgeon's part, and if such a procedure is followed, the remainder is the patient's liability. The comparison

of vein care to the maintenance type of practice in dental prophylaxis is well accepted and understood by co-operative individuals. After all, with the treatment as it is today, we can only offer the patient improved circulation from the legs by the use of more efficient avenues of return blood flow.

There is a characteristic quality of the legs of patients with varicose veins, and it is atony. Whether it is the result or effect, I am not certain, but one thing is sure—atony is not cured by rest. Therefore, the taking of arch supports from shoes is worth while. It may not be immediately possible in the patient who has long been an adherent of the philosophy that his health and well-being should be given him and in no way be a product of some of his own effort. He will have been ambulating for a long time with some fancy formed metal in his shoe and the muscles that should have been working will be quite atrophic. Yes, the main pumping mechanism, his calf muscles, in great part have ceased to function, save in a minimal amount. Instead this poor misinformed product of easy living should spend a great part of his waking hours walking correctly and doing exercises designed to re-introduce his calf muscles to the fact that they were not slung between two bones as padding or insulation but as an integral part of his locomotion and concomitantly as the pump element to carry away the waste material self-produced in carrying out their task. Is there any excuse to ever justify the use of an arch support? Of course, highheeled shoes are not for walking; they are for clumping. Women have varicose veins about three to one as compared with men—enough said.

In conclusion, to be certain that this subject is far from settled, it seems worth while to quote from Holman in the twenties: "Varicose veins and the attendant ulcers both may long continue to offer a fruitful field of surgical failure." In 1939 Freeman echoed with "The trail of varicose veins is laden with chagrin." It is true that routine operations will cure the average patient, but unusually careful treatment alone will secure the high proportion of good results which represents successful surgery.

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POLITICAL MEDICINE

In dedicating a new 40 million dollar government medical research center at Bethesda, Md., President Truman got in another plug for one of his pet state welfare projects, compulsory "national health insurance." He said that many people couldn't afford to buy insurance in one of the non-profit health insurance organizations.

These plans charge exactly what they need to meet their claims. It is not even argued that a government bureaucracy could do business cheaper than a private company.

It follows that if an individual can't afford a private health policy, he cannot afford to pay a government agency the true cost of his insurance. Mr. Truman knows this quite well. In essence, what he proposes is high taxes on some people to pay for those who contribute less than cost.

This is a wealth-sharing scheme, a system of political medicine under which medical care would be conducted with the same efficiency as the post office. It is a plan for new taxation, and to call it "insurance" is a fraud. —*Chicago Daily News,* July 19, 1951.

SURGICAL TREATMENT OF DISEASES OF THE HEART AND GREAT VESSELS

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THE surgical treatment of diseases of the heart and great vessels is based upon a somewhat different concept than is that of many infectious and malignant lesions. In infectious and malignant diseases operation is done for the removal or destruction of tissues. The concept underlying the operative management of cardiovascular diseases, however, is that by certain procedures the circulation can be restored to a more nearly normal condition. Thus instead of being extirpative or destructive, these operations are reconstructive. They offer to the surgeon an unparalleled opportunity for performing good.

It is obviously impossible in a presentation of this type to speak in detail concerning this fascinating subject. I do hope, however, to indicate the scope of this field of surgical endeavor and to present a few of the results which can be obtained.

Although the roots of the surgical treatment of many maladies connected with the heart and great vessels go back a long time, there can be little doubt that the most important recent stimulus to the surgical attack upon heart disease was the successful closure of a patent ductus arteriosus by Gross of Boston in 1938.[15] Since that time rapid advances have been made, until today a great host of cardiovascular diseases and anomalies come to the attention of the surgeon.

Chronic constrictive pericarditis has been shown to be amenable to surgical treatment in the great majority of instances. Patent ductus arteriosus has already been mentioned as being a malformation which is ideally suited for surgical treatment, as is coarctation of the aorta. A certain number of lesions which produce symptoms by encirclement of the trachea and esophagus, the so-called vascular rings, are also amenable to surgical management. Certain complex malformations resulting in insufficient pulmonary blood flow and cyanosis, including the tetralogy of Fallot, are likewise subject to surgical management. Finally, certain lesions within the heart itself, notably pulmonic stenosis of the valvular type and mitral stenosis, are also now within the realm of the surgeon's endeavor.

The field is not a static one, however, because there are other lesions which, although not at present amenable to surgical treatment, no doubt will be at some future time. Atrial septal defects and ventricular septal defects are being investigated intensively, and I am confident these will soon come under the surgeon's care. Aortic stenosis has already been subjected to surgical treatment[1,13] and may well someday be included among those lesions which are favorably influenced by surgical measures. Still further congenital malformations and acquired cardiac lesions may be amenable to operative treatment before long. Certainly, experience indicates that no accurate predictions can be made as to the future limits of cardiac surgery.

Patent Ductus Arteriosus

Patent ductus arteriosus is a malformation which must be considered in some detail in any discussion of surgery of the heart and great vessels. This is so for two reasons. First, as mentioned, the first successful closure of the patent ductus arteriosus really stimulated a great deal of the present interest in cardiovascular surgery. Second, the operation for patent ductus arteriosus remains the most satisfactory operation in the entire field of cardiovascular surgery. This is so because a properly performed procedure for this malformation renders the patient virtually a normal individual in the great majority of instances.

The patent ductus arteriosus produces a shunting of blood from the aorta to the pulmonary artery, so that approximately 40 to 70 per cent of the blood flowing out into the aorta is passed into the pulmonary circulation. Obviously the physiologic disturbances resulting from this arteriovenous shunt are significant. There is a diminution in the peripheral systemic circulation, as a result of which some of these patients present severe stunting of growth. Congestive heart failure and subacute bacterial endarteritis or

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endocarditis may follow in the wake of this malformation. It has been shown[20] that the life expectancy of a patient with a patent ductus arteriosus is indeed limited, since the majority do not survive beyond the age of forty years.

Because of these factors there can be, in my opinion, little doubt that patients with patent ductus arteriosus should undergo operation. The criteria for the diagnosis of this lesion are well known. It should be stated, however, that approximately 5 per cent of patients with patent ductus arteriosus will present an atypical syndrome.[9] That is to say, these patients do not have the typical machinery murmur nor the other well-known stigmas of this lesion. In this small group of cases the accurate diagnosis of patent ductus arteriosus can be made only by cardiac catheterization studies.

Once the diagnosis of patent ductus arteriosus is made, the question arises as to the proper time for operation. Operation should, in general, be deferred until the child is approximately three years of age. However, if a small infant shows signs of progressive cardiac enlargement and heart failure, the operation must be undertaken at the time that this occurs regardless of the age of the patient.

The details of the operative technique are not of great concern today. It should be pointed out, however, that there is a difference of opinion as to whether the patent ductus arteriosus should be ligated or divided. Gross and Longino, Potts,[22] and others[26] are firmly of the opinion that these patients are best treated by complete surgical division of the patent ductus arteriosus. On the other hand, Blalock[2] has championed the multiple ligation technique for closure of the ductus; recently 161 cases of patent ductus arteriosus treated in his clinic by this technique have been reported[25] and in no cases has recanalization been known to recur. In the institution with which I am associated there exists this difference of opinion, some choosing to ligate the patent ductus arteriosus while others favor division of the patent ductus. The operative mortality with either technique is very low, in the region of 1 to 2 per cent. The end results are exceedingly gratifying since by the closure of this abnormal shunt the patient's cardiovascular physiology is returned to normal.

Thus we have for patent ductus arteriosus that for which all of us in surgery constantly strive but rarely achieve—a perfect operation.

Coarctation of the Aorta

Coarctation of the aorta is an abnormal constriction of the aorta, usually situated just distal to the origin of the left subclavian artery, which results in a blockage of the flow of blood through that portion of the aorta. As a result of this obstruction, the blood pressure rises in the upper portion of the body, intense collateral circulation develops between the upper and lower portions of the aorta, and the blood supply to the lower extremities is diminished. It has been shown by careful studies that the prognosis for patients with this malformation is indeed grave, since nearly all are dead by the age of forty to forty-five years.[24] As one might expect, the death in coarctation of the aorta occurs either as a direct result of the coarctation, that is, from the formation of an aneurysm in the region of the coarctation, with subsequent rupture of the aneurysm and sudden death; or it may occur as a result of the hypertension with intracranial hemorrhage or as a result of cardiac failure caused by the tremendous strain placed upon the left ventricle.

The investigations of Blalock and Park, the brilliant experimental work of Gross and Hufnagel, followed by Gross' application of the experimental findings to man with the performance of a successful operation,[14] and the pioneering work of Crafoord and Nylin in operating on patients with coarctation of the aorta are so well known as to preclude discussion of them. It is apparent that the proper surgical treatment for this malformation is excision of the coarctate site and end-to-end anastomosis of the aorta. I should like to summarize very briefly the experience with this operation at the Mayo Clinic in order that you may have some idea as to the efficacy of the procedure as well as of its relative safety.

In a series now numbering more than eighty cases,[10] the operative mortality rate has been approximately 8 per cent. There have been no deaths in the last fifty-five cases. In approximately 10 per cent the condition has proved at exploration to be inoperable, because of formation of an aneurysm near the coarctate site, because of excessive length of the strictured segment, or because of generalized hypoplasia of the aorta. One patient recently operated upon is interesting in that the condition was inoperable because of a dissecting aneurysm which actually developed during operation. The results of operation in a portion of this series have recently been published.[10] They found that

90 per cent of the patients had an excellent result, as judged by lowering of the blood pressure in the arms and elevation of the pressure in the femoral arteries.

Thus it is believed that operation is indicated for all persons with coarctation of the aorta, unless they are beyond the age limits set for surgical treatment. These age limits are not definite, but certainly the results are less favorable and the operation is more hazardous when the patient is over forty years of age, particularly if the patient is a male. It is probably wise to defer operation in a child until he has become about fourteen years of age, unless evidence of rapid cardiac enlargement appears. Should this supervene, operation is necessary without further delay, in order that heart failure may be prevented. For this reason, operation must be performed in infancy in occasional cases.

Vascular Rings

The so-called vascular rings are an interesting group of lesions, which may produce esophageal or tracheal obstruction or both. This obstruction results from an encirclement of or an encroachment upon the esophagus or trachea by certain anomalous vascular structures. Thus infants or children with this anomaly frequently present severe stridor and a history of recurrent "bronchitis." They may also have great difficulty in feeding. It is important that we be aware of these anomalies because they are amenable to surgical treatment.

The diagnosis can usually be made accurately by an experienced roentgenologist[21] through a study of the defects produced by these anomalous structures on the barium-filled esophagus.

Of the many types of vascular rings only three of the more interesting and important ones will be mentioned. The first is the so-called double aortic arch, in which the arch originates in the usual manner from the left ventricle but in its course upward into the mediastinum divides into a left and right aortic arch. These arches, after encircling the trachea and esophagus, join so as to form a single descending aorta. This produces a very tight vascular ring around the trachea and esophagus. Fortunately it is possible surgically to divide one of these two arches. An attempt is always made to divide the smaller of the two, in most instances this being the anterior arch. The division of this arch obviously breaks the vascular ring. A most dramatic result can be obtained in an infant with this anomaly by a properly performed surgical procedure.

A second interesting anomaly producing a vascular ring is that in which there is a right aortic arch and a right-sided descending aorta but in which the ductus arteriosus originates from the left side and passes behind the trachea and esophagus to join the aortic arch on the right. Obviously this likewise produces obstruction of the trachea and esophagus, primarily the esophagus. It is apparent that division of the ductus arteriosus breaks the vascular ring and relieves the obstruction.

The third condition is that of the anomalous right subclavian artery. In this condition the right subclavian artery, instead of originating as usual from the innominate artery, originates as the fourth branch of an otherwise normal aortic arch. Having arisen thus on the left side, it passes to the right behind the esophagus and may encroach upon the lumen of the esophagus to such an extent that true esophageal obstruction is produced. This condition was described many years ago by the term "dysphagia lusoria"; in other words, dysphagia produced by a "freak of nature." Posterolateral thoracotomy on the left enables the surgeon to dissect out the anomalous right subclavian artery and to divide this structure, thereby relieving the pressure upon the esophagus. Experience shows that this can be done safely without compromise of the vascular supply to the right arm.

I cannot refrain from pointing out that again surgeons are deeply indebted to Gross[18] for his pioneering efforts in the treatment of these anomalies. My colleagues and I, as well as others, have followed in his footsteps in the treatment of these conditions, and have obtained exceedingly gratifying results.

The Tetralogy of Fallot and Related Malformations

The tetralogy of Fallot is probably the commonest cause of "blue babies." This is the combination of pulmonic stenosis, interventricular septal defect, biventricular origin of the aorta, and right ventricular hypertrophy. This malformation results in insufficient pulmonary blood flow, and in the delivery of mixed venous and arterial blood into the aorta, rendering the patient cyanotic.

The brilliant contribution of Blalock[6] in the treatment of the tetralogy must forever assure him a prominent place in the history of surgery in the twentieth century. He demonstrated that blood can be shunted from the aorta into the pulmonary artery by means of an anastomosis between the subclavian artery and one of the pulmonary arteries, and that this shunting of blood relieves cyanosis and markedly improves the exercise tolerance of these patients. He has reported a series of 610 such operations.[3] Potts has utilized a modification of this operation in which the shunt is established by a side-to-side anastomosis of the upper part of the descending aorta with the left pulmonary artery.[23]

Our own experience at the Mayo Clinic has convinced us too of the real efficacy of these procedures. I shall not discuss techniques or results in detail, but should like to point out that we now have available for certain cases of the tetralogy of Fallot an operation which may be superior to the shunt operation, namely, the direct operation upon the pulmonic valve. In my opinion, this operation is indicated only in those cases of the tetralogy of Fallot in which the obstruction to the pulmonary blood flow is on the basis of a valvular pulmonic stenosis. This situation pertains in only about 20 per cent of cases. In the remaining 80 per cent, the obstruction is primarily in the outflow tract of the right ventricle, constituting so-called infundibular stenosis. I do not believe that the direct operation is advisable in these cases, at the present time.

The belief that the direct operation is preferable to the shunt operation in cases of the tetralogy of Fallot makes it mandatory that exploration be carried out in these cases through the left side of the chest. The pericardium is opened routinely, so that it may be determined by certain criteria whether the pulmonic stenosis is a valvular or infundibular one. If it is valvular, a direct operation is done upon the stenotic pulmonic valve, approaching it through the right ventricle. If the obstruction is infundibular, an aortic-pulmonic anastomosis, or an anastomosis of the left subclavian artery with the left pulmonary artery is effected.

Valvular Pulmonic Stenosis With Closed Ventricular Septum

Valvular pulmonic stenosis with closed ventricular septum, the so-called isolated pulmonic stenosis, is a distinct clinical entity, which should be sharply separated from the tetralogy of Fallot.[12] The pulmonic stenosis may be the only cardiac defect, or there may be an associated atrial septal defect. These patients have real disability from this malformation in many instances. There may be stunting of growth, severe exercise intolerance and, in cases in which there is an associated atrial septal defect, cyanosis.

As a result of the pioneering efforts of Brock,[7] in England, there is now a very satisfactory operation for valvular pulmonic stenosis. This is the direct operation on the pulmonic valve, which is the same operation, earlier mentioned, that we use in those cases of the tetralogy of Fallot with valvular pulmonic stenosis.

Careful evaluation of the condition of the patient suspected of having so-called isolated pulmonic stenosis is mandatory. In our institution, these patients are meticulously studied by the pediatricians and cardiologists. Cardiac catheterization is carried out, under the direction of Dr. Earl Wood, both preoperatively and postoperatively, and is of the greatest assistance.

We do not consider that the mere diagnosis of valvular pulmonic stenosis is an indication for operation. Of course, if the patient with this malformation is having symptoms, operation is indicated. Even in the absence of symptoms, operation is probably indicated in cases in which the right ventricular systolic pressure is in excess of 50 to 60 mm. of mercury, as measured by cardiac catheterization.

Exposure for this operation is obtained through a left anterolateral approach. The pericardium is opened. The right ventricle is hypertrophied, the sinuses of Valsalva are not present, and the proximal portion of the pulmonary artery is diffusely dilated. Most important, a very forceful but fine jet of blood can be felt squirting into the pulmonary artery through the very stenotic pulmonic valve. A transverse incision is made into the right ventricle and a special cutting knife is passed into the ventricle and through the pulmonary valve into the pulmonary artery. This is followed by a large dilator so as to insure an adequate opening. The ventricular wound is then closed carefully with interrupted silk sutures.

Excellent results, both in the state of the circulation as measured by cardiac catheterization and in the patient's exercise tolerance and general well-being, can be obtained by the operation. De-

spite the fact that intracardiac manipulations are involved, the operative mortality has been very low, both in our hands and in the larger series reported by Brock and Campbell, and Blalock and Kieffer.

Mitral Stenosis

The last cardiac lesion which I wish to discuss is mitral stenosis. The ramifications of the subject of the surgical treatment of mitral stenosis are so numerous and so varied that it is impossible to discuss the subject adequately in a presentation of this type. It may be of some value, however, to indicate in a general way the accomplishments of the operation and the indications for it as well as the results obtained by it.

The fundamental lesion in mitral stenosis is a deformity of the mitral valve, resulting in a reduction in the size of the valve opening during ventricular diastole. The exact nature of the deformity varies from case to case, but in the majority of cases there is a thickening of the tissues at the medial and lateral commissures, and frequently an actual fusion of the anterior and posterior leaflets in these regions results in a marked lengthening of the original commissures.

The operation which my colleagues and I have employed for mitral stenosis is that of mitral commissurotomy. Bailey and his colleagues originally noted that if one cuts accurately into the medial and lateral commissures one can markedly enlarge the valvular orifice while preserving valvular function. Our experience has borne out their concepts, and I am now completely satisfied that one can, in the great majority of cases, open up the orifice of the valve by mitral commissurotomy without producing mitral regurgitation.

This point is worthy of emphasis, for it is too firmly rooted in the minds of many that mitral regurgitation always results from operations on the mitral valve. This is not the situation. True, mitral regurgitation occurs if one of the valve cusps is cut, instead of the commissures. However, if the commissures are accurately attacked, mitral regurgitation does not occur. This can be judged very well at the time of operation with the finger in the left atrium. The valve can be felt during its opening and closing, and any blood regurgitating back through the valve during ventricular systole is readily appreciated.

The operation is carried out through a left posterolateral incision. The right index finger is inserted into the left atrium, entering this chamber through the tip of the left atrial appendage. A special cutting instrument is carried in on the index finger. Note is made of the valvular orifice, the nature of the valvular lesion producing the mitral stenosis, and of the presence or absence of an associated mitral regurgitation. This latter is relatively uncommon as a concomitant of mitral stenosis, judging from our experience. The landmarks allowing accurate identification of the commissures are then sought, this being an extremely important portion of the procedure. The cutting instrument is then brought precisely to the lateral commissure, and the commissure is incised out to the valve ring. The result is then assessed. In certain cases it is desirable to cut similarly into the medial commissure, although this is not always done. After withdrawal of the finger, the major portion of the left atrial appendage is removed, and the base is closed with interrupted silk sutures.

Before mention is made of the indications for and the results of operation, it should be emphasized that the surgical treatment of mitral stenosis, as of other cardiovascular lesions, is an enterprise which in our institution requires the utmost in co-operation between the various individuals involved. We are completely dependent upon our cardiologists for the preoperative evaluation of the condition of these patients. Their great care in arriving at the diagnosis and their constant and complete co-operation in preoperative and postoperative management have been indispensable to us at the Mayo Clinic. Dr. Earl Wood has supervised the cardiac catheterization in all the patients we have operated upon, and his analysis and interpretation of these data are of tremendous assistance to us. Operations of this type are obviously impossible without the help and co-operation of an experienced anesthesiologist. Dr. J. W. Pender has been in charge of the anesthesia and supportive care during operation in our cases, and this has been one of the extremely important factors which have allowed us to do these operations safely.

It is my opinion that patients with mitral stenosis who are having moderate or severe symptoms should be considered as possible candidates for operation, for I believe on the basis of our experience to date that these people are definitely, and occasionally dramatically, improved by operation. Probably the only rigid contraindication to

operation is the presence of active rheumatic fever. However, the presence of associated valvular lesions, of uncontrolled cardiac failure, and of uncontrolled ventricular tachycardia, render operation more hazardous and less certain of producing a good result, although they do not definitely contraindicate it in all cases.

The results of operation have been gratifying. We have become convinced that mitral valvulotomy is an important part of the therapeutic armamentarium for mitral stenosis.

Summary

It has been pointed out that a number of lesions of the heart and great vessels are now best treated surgically. These include chronic constrictive pericarditis, patent ductus arteriosus, coarctation of the aorta, vascular rings, the tetralogy of Fallot and related conditions, pulmonic stenosis with intact ventricular septum, and mitral senosis. The surgical techniques are being constantly improved for each of these conditions, a circumstance which allows the production of more nearly perfect anatomic and physiologic results with an ever decreasing operative mortality. New lesions, such as atrial and ventricular septal defects, aortic stenosis, and others, await only further perfection of methods before they too can be counted among those diseases of the heart and great vessels which are successfully treated by operation. This remarkable field of surgery has become one of the most satisfying to the surgeon, because he is so often rewarded by an excellent result. It has also made those of us engaged in it very humble, for I believe we all realize that these fine accomplishments are possible only with the complete and intimate co-operation of our colleagues in cardiology, radiology, physiology, and anesthesiology.

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VERTIGO

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THE symptoms, "vertigo," "dizziness," "blackout," "unsteadiness," "drunkenness," "imbalance" and the like, are among the most frequent met with in medicine. The potential differential diagnostic value of these symptoms seems not to have been realized because of a lack of clarity in the mind of the examining physician as to the exact meaning of these individual terms. The tendency to consider them as synonyms has risen to the detriment of diagnosis.

While the difficulties of obtaining an exact description of symptoms from a reluctant and confused patient may be great, if these terms are clearly defined in the physician's mind, the rewarding information will often compensate fully for the effort expended.

Vertigo, dizziness and the rest are subjective sensations not amenable to observation or measurement. It is well known that a subjective sensation can be described only in terms of an experience common to the interested individuals. Probably because of the time consumed in finding an exact common experience it has been found easier to let "vertigo" go as a synonym for such terms as "dizziness," "giddiness" and the like. McNally and co-workers,[12] for instance, felt that because patients used these terms indifferently in describing the sensation produced by caloric testing of labyrinthine function, and because "dizzy" and "vertigo" were both derived from words that meant whirling or turning, a distinction between these two words is uncalled for. He would appear to be in error as to his second statement, for the Oxford dictionary derives "dizzy" from the old English word "dysig," meaning foolish or stupid. "Dizzy" is still used in this sense by the vulgar of this country, usually as a qualification of hair coloration, although the Oxford dictionary reports that this use has not been general in England since the thirteenth century. Vertigo, however, is derived from the Latin word for turning. In medical discussions of vertigo, while it is of great importance that the physician should have a clear understanding of the meaning of the word used, the state of confusion of the laity in regard to the matter should be of minor concern.

Weiss stated that because patients describe vertigo or dizziness indiscriminately as "swimming," "reeling," "giddiness," "lightheadedness," "faintness," "drunk feeling," or a sense of "foolishness," the first step in the treatment of vertigo or dizziness is the proper interpretation of the patient's complaints. Without this, effective treatment, he stated, is not possible. Weiss defined vertigo in the strict sense as an experience in which the patient has the sensation that the outer world is moving about him (objective vertigo, eyes open) or that he himself is whirling in space (subjective vertigo, eyes closed). Frequently, however, the term "vertigo" is used erroneously as a synonym for dizziness or giddiness to indicate a disturbed relationship to surrounding objects in space. The terms, "dizziness" and "giddiness," Weiss felt, should be restricted to an abnormal sensation of unsteadiness characterized by a feeling of movement within the head, without the sensation of the external world or the patient himself being in motion.

Dizziness or giddiness as a subjective sensation should not be confused, on the other hand, with the sensation of unsteadiness associated with ataxia. At times true vertigo and dizziness can co-exist.

According to McNally,[11] the labyrinth is so designed that it is stimulated by any movement of the head in space. The resulting reactions are compensatory and are intended to return the body, head and eyes to their original position. As Tait put it, it is one of the marvels of our organization that the three pairs of canals working in association with the four straight and two oblique muscles of the eye, present us (or any vertebrate) with an adequate view of the surroundings even though the pedestal or support of the registering camera be temporarily rocking or swinging.

McNally expressed the belief that, if the labyrinth is stimulated by anything other than an active movement of the head, the central nervous system does not differentiate between this and a

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From the Section on Otolaryngology and Rhinology, Mayo Clinic, Rochester, Minnesota.

true movement of the head, with the result that the stereotyped set of reactions is called forth to meet an emergency that has not arisen. A message goes through to the central nervous system that the head has moved, but the eyes and bodily sensations inform the central nervous system that the head has not moved, and it is these contradictory messages which result in the sensation of vertigo.

Nickle gave a somewhat similar description of the origin of vertigo but allowed for the separate sensations of dizziness and unsteadiness. He stated that under normal conditions the interlocking control mechanism of the vestibular connections which is represented most often bilaterally is so poised that there is compensation for all movements and changes of position of the body. If incoördination of any part of this system with the system as a whole occurs, conflicting impressions are transmitted which the higher reflex centers cannot co-ordinate. The resulting confusion then results in vertigo, dizziness or unsteadiness. True vertigo appears to arise from disturbances of the vestibular end organ, the vestibular nuclei or possibly from the central connections. Dizziness and unsteadiness (incoördination) may arise from disturbance of the proprioceptive, exteroceptive or central portions of the mechanism. Stimulation of the labyrinthine end organs seems to produce a much more marked and vivid subjective impression of angular acceleration about an axis or linear acceleration than irritation arising in the vestibular nuclei. The most important difference, according to Alpers, between vertigo due to labyrinthine involvement and lesions of the brain stem, lies in the clear-cut nature of vertigo associated with peripheral disease. He stated that in vertigo associated with central lesions, patients find it difficult even with help to describe precisely the nature of the sensation they experience. Patients with labyrinthine vertigo have no such difficulty. However, experience has taught that McNally's warning that labyrinthine stimulation does not always produce a sensation of turning is correct. It would seem best to state that mild disturbances producing stimulation of the labyrinthine end organ do not always produce a clear-cut sensation of turning, although this seems to be the rule.

Central vertigo (often mere dizziness) may begin when the patient is at rest and is independent of movement. This distinguishes central dizziness or vertigo from those sensations produced by disturbances of the proprioceptive and exteroceptive correlations other than those caused by stimulation of the end organ. It seems doubtful whether true subjective or objective vertigo occurs other than exceptionally from stimulation above the vestibular nuclei, although it has been reported. These reports seem to depend in the main on confusion as to the definition of vertigo. Foerster, however, observed that stimulation of the superior lip of the interparietal sulcus evokes violent vertigo. The patient either sees the objects before him moving toward the side of the stimulation or has the sensation of turning toward the opposite side. This description of Foerster's would seem to indicate that nystagmus was present with this vertigo.

In spite of the fact that in most cases of end organ irritation the vertigo is of the obvious peripheral type, patients will be seen either in whom end organ stimulation does not produce true rotatory vertigo, or who are unable to give a description of the sensation they have experienced or who have a sensation much less vivid than the average. This fact was recognized by Ménière[13-15] in his papers describing the disease that has come to be known by his name. He described four types of vertigo or dizziness that are present in the crisis or attack and one type that is present between attacks. First, he said, the patient may have a true rotatory vertigo coming on without warning and tending toward remission and recurrence. The patient who has this type of vertigo, on opening the eyes while lying in bed will see the room whirling around him, and attempts to move will produce violent nausea and vomiting. Second, he described a condition in which the patient both feels and is unsteady. On attempting to walk he may veer to one side or the other and bump into a stone wall or a tree. Third, the patient may experience the sensation of an up-and-down or to-and-fro motion. One of Ménière's patients described his sensation as that of "being on the bridge of a ship at the mercy of a stormy sea." Fourth, the patient without previous warning may be thrown violently to the ground as though struck on the head, and afterward while lying down experience violent vertigo, nausea and vomiting.

Shambaugh pointed out, as did Lermoyez later, that the anatomic distribution of the blood supply to the cristae and macula is such that vasospasm

could shut off the blood supply to these nerve centers independently. Since it has been demonstrated that the stimulus to the cristae ampullares is angular acceleration about an axis and, to the macula utriculi, that of linear acceleration or slow tilt, it is felt that anoxemic stimulation of these centers would give in the case of the cristae a sensation of turning or vertigo, and in the case of the macula the sudden fall and the up-and-down sensation. This hypothesis has received acceptance from Wright, Tumarkin and lately Hilger. Lermoyez pointed out that vasospasm might be of long duration and that sudden release of vasospasm would constitute as violent a stimulus as its sudden onset. He therefore explained sudden relief of long-continued symptoms of dizziness and unsteadiness following an attack of vertigo on the basis of sudden re-establishment of autonomic balance following a prolonged period of cholinergic preponderance with vasospasm.

Ménière[13-15] also stated that the patient with the disease that now bears his name, between crises of the disorder, is unable to turn the head suddenly, or lie down in or get up from bed without experiencing some degree of either vertigo or dizziness, although rarely to a severe degree. He also described a "syncopal state" with pallor, cold sweat, feeble pulse and nausea as being associated with the severe attacks or crises. Lindsay has considered the first of these conditions under the heading of positional vertigo and pseudo-Ménière's disease. He pointed out that they apparently indicated a hyperirritable state of the labyrinth and that they would often progress into true Ménière's disease, indicating a similar basic physiologic mechanism.

The pallor, nausea and vomiting are usually explained by the close anatomic relationship of the vestibular and vagus nuclei.

Relationship of Vertigo and Nystagmus

If vertigo is defined in the strict sense indicated in the definition of Weiss, the relationship between the sign of nystagmus and the symptom of vertigo is very close. Brunner, for instance, stated that nystagmus of the third degree is always present with vertigo of any severity. Kobrak has raised the question as to whether or not vertigo and nystagmus are parallel phenomena, both being independently produced by the same stimulus, or whether vertigo is secondary to central stimulation produced by the nystagmus. In his opinion the latter is true.

Best and Taylor pointed out that the nystagmus produced by labyrinthine stimulation differs from the vertigo produced in regard to its relation to the plane of the canal stimulated, whereas vertigo after cristal stimulation may vary in its direction, depending on changes in the position of the head. The reason for this difference is that whereas nystagmus is reflexive, the sensations of vertigo are largely the result of cerebral interpretation of movement of endolymph, and the position of the head at the moment is taken into account. This indicates that there is very little of diagnostic value in ascertaining the direction of vertigo. This finding, however, seems to support the opinion of Kobrak that vertigo is secondary to central stimulation produced by the nystagmus, the labyrinthine message conflicting with the information being relayed from other proprioceptors and exteroceptors. According to Leidler, however, there may be dissociation of vertigo and other vestibular symptoms in cases of nonsuppurative encephalitis.

The sensations of giddiness, dizziness, unsteadiness and the like, on the other hand, are not associated with nystagmus. McNally[11] found that there was no evidence that the saccule subserved an equilibrial function, and he demonstrated that utricular stimulation did not produce nystagmus. With the exception of the rare instances of utricular stimulation, irritation of the vestibular system, under which is included the labyrinth, the vestibular nerve, the vestibular nuclei and their central connections, results in rotatory vertigo and is associated with nystagmus. The important difference between vertigo due to involvement of the end organ and that due to stimulation of the vestibular nuclei and higher centers lies in the usual clear-cut nature of the vertigo associated with peripheral disease. In vertigo associated with central lesions patients may find it difficult even with help to define precisely the nature of their sensation. Patients with labyrinthine vertigo have no such difficulty.

Unsteadiness is apt to arise from irritation of the equilibrial mechanism other than the vestibular system. The equilibrial difficulties associated with walking in the dark experienced by individuals who have lost either their tendon and joint sense or their vestibular mechanism on both sides are due to the blindfolding effect of darkness

on the optical righting reflexes present in higher mammals. Man depends on (1) the ocular, (2) the labyrinthine and (3) the tactile and kinesthetic reflexes in maintaining normal posture. In man with closed eyes, if either the utricular or somesthetic reflex is gone, the remaining reflex is not sufficient to maintain posture. Dizziness and drunkenness on the other hand are seen in association with syncope and intoxications.

It would seem, therefore, that most of the confusion in regard to the symptom of vertigo has resulted from neglect of proper definition of the terms used. If the differences between "vertigo," "dizziness," "foolish feeling," "confused feeling," "dimming out," "unsteadiness" and the like are kept well in mind and sufficient effort expended to obtain from the patient a description indicating which one of these sensations he is experiencing, no matter what the word he has selected as its name, a forward stride may be taken in the understanding of the problem presented. The examiner should never be satisfied with a single descriptive term. The patient is sure to be confused as to its meaning; the examining physician on the other hand ought not to be.

Disorders in Which Rotatory Vertigo Is Present

Vertigo From Disorders of Function (Transitory and Reversible).—(1) Vertigo due to cerumen in the external auditory canal. (2) Vertigo due to tubal occlusion. Such occlusion usually produces a sensation of unsteadiness or dizziness, but in occasional instances true rotatory vertigo is produced. (3) Positional vertigo. This is a transitory vertigo produced by sudden motion of the head or body such as turning over in bed. (4) Ménière's disease. This is a transitory vertigo with a tendency to recur, and usually is of great severity with associated nausea, vomiting, syncopal state and cochlear symptoms. It is due to labyrinthine ischemia produced by arteriolar spasm and is usually associated with endolymphatic hydrops. As a rule it responds readily to simple medical treatment but occasionally may require surgical intervention.

These first four causes of vertigo suggest a hyperirritable condition of the labyrinth associated with autonomic dysfunction, arteriosclerosis, hypotension, or a combination of all three.

Vertigo Associated with Vascular Accident (Thrombosis).—Thrombosis or embolism of the branches of the posterior inferior cerebellar artery or of the internal auditory artery supplying the labyrinth and the vestibular nuclei has been mistaken for an initial attack of Ménière's disease. In thrombosis or embolism, however, a severe initial attack of vertigo occurs which is followed by slow recovery and no recurrence. Recovery may take several months, as opposed to the hours or days for recovery from an attack of Ménière's disease.

According to Woltman, the commonest disorder that we see that has a degree of vertigo comparable in intensity to that of the vertiginous crises of Ménière's disease is the onset of thrombosis of a posteroinferior cerebellar artery. With this generally go dysphagia, a sensory disturbance of the face and often an impairment in appreciation of pain and temperature in the opposite side of the body.

Vertigo Associated With Infections of the Ear.—If an infection of the middle ear invades the labyrinth through preformed pathways or erosion of a bony semicircular canal, irritation of the cristae may result with transient attacks of vertigo. If cholesteatoma in the mastoid with fistula in the canal wall with intact drum is present, the identification of chronic aural suppuration is not always easy. A history of otitic suppuration and a positive result with the fistula test are usually obtainable.

Skeletal Deformities Producing Vertigo.—Platybasia or basilar impression usually secondary to Paget's disease of the skull is an infrequent cause of vertigo associated with deafness. A roentgenogram of the skull is usually sufficient to establish the diagnosis.

Vertigo Produced by Trauma of the Head.—Since vertigo from injury of the head seems to depend on petechial hemorrhages in the region of the vestibular nuclei, the vertigo is likely to be severe and difficult to differentiate by history from that produced by end organ irritation. This type of vertigo tends to come in recurring attacks. Often injury to the auditory apparatus is associated with severe injuries to the head, so the presence or absence of loss of hearing may not prove to be a valuable distinguishing feature. Grove stated that all patients with severe injury of the head and subsequent somatic, not psychogenic, vertiginous attacks will always be found to

have occasional attacks of nystagmus accompanying them.

Toxic Vertigo.—Toxins from focal infections in the teeth, tonsils or sinuses, or the toxic effects of certain substances such as quinine, tobacco, the salicylates and the sulfonamides are said to cause episodic attacks of vertigo. This is a matter in which it is difficult to produce definite proof. It is occasionally observed in the clinic that removal of infected tonsils or teeth and the like will be rapidly followed by the disappearance of vertigo. Stopping the use of tobacco and certain drugs, especially quinine and the salicylates, will also produce a similar apparent improvement. Such vertigo may represent a type of specific sensitivity which is obvious when the vertigo is associated with the ingestion of a certain food or drug.

Vertiginous Epilepsy.—In vertiginous epilepsy, an unusual disorder, the attack may seem typical of positional vertigo or pseudo-Ménière's disease. The most important differential point is the period of sleepiness following the attack. If sleepiness is found in the history, an electroencephalogram should be taken.

Migraine With Vertigo.—It has been suggested that the differentiation of vertiginous migraine from Ménière's disease is an important one. It would appear from the evidence, however, that Ménière's disease and migraine are closely related vascular syndromes. The association of headache with Ménière's disease has been frequently pointed out. Emotional factors are often prominent in promoting both conditions, and similar therapeutic agents have often been found effective in both conditions. Therefore this differentiation appears to be of less than major importance.

Psychogenic Vertigo (Vertigo Associated With Anxiety Hysteria or Conversion Neurosis).—Patients who are under severe anxiety and tension, termed by Cannon "the minor aspects of fear," readily transfer their subjective feelings of insecurity into the sensation of vertigo, dizziness or unsteadiness. Such patients who have a foundation of previous attacks of true rotatory vertigo on which to build their story are particularly difficult to differentiate. Indeed the vertigo itself may be the cause of the feeling of insecurity and anxiety, and some degree of psychogenic vertigo usually accompanies Ménière's disease of long standing. It may be difficult to tell from the patient's story whether a recent attack of vertigo was due to a functional derangement of the peripheral vascular bed or was psychogenic in origin. An important factor in the treatment of a patient with recurring attacks of vertigo may be treatment of the secondarily induced anxiety state by discussion, explanation and relaxing psychiatric and physical therapy.

Vertigo Associated With Intracranial Disease (Bruns' Syndrome).—Woltman has found Bruns' syndrome most difficult to differentiate from Ménière's disease on occasion. Bruns originally described episodic attacks of nausea, vomiting and headache associated with cysticercosis of the fourth ventricle. According to Obrador, cysts in the ventricular system are most frequently observed in the fourth ventricle, more rarely in the lateral and third ventricles, and may be isolated or multiple. Sessile tumors of the ventricles have also come to be included under Bruns' syndrome. Fairly typical features of these mobile cysts are the intermittence of the symptoms and the fact that they are associated with or accompanied by severe headaches which begin with or are exaggerated by postural changes. Other symptoms are vomiting, diplopia, loss of vision, vertigo, disturbance of consciousness with incoherent and difficult speech, bilateral papilledema, hypotonia of limbs and ataxia.

Vertigo in Multiple Sclerosis.—Alpers stated that recurring vertigo is an initial symptom in 10 per cent of the cases of multiple sclerosis. This vertigo is often associated with nystagmus, with pallor of the temporal sides of the optic disks and with absence of abdominal reflexes.

Because the lesions causing these symptoms in multiple sclerosis were in the vestibular nuclei or their pathways, and because the symptoms of ventricular cysts were produced by pressure on these same structures, Alpers and Yaskin proposed that all vertiginous symptoms produced by diseases or tumors affecting these structures be classified under the title of Bruns' syndrome. When "Bruns' syndrome" is not caused by a tumor, as for instance in multiple sclerosis, these authors felt that not all the characteristic features are present.

Tumors of the Cerebellopontine Angle.—Tumors of the cerebellopontine angle such as meningiomas appear to be more likely to produce attacks of recurring vertigo than are schwan-

nomas of the eighth cranial nerve. These lesions may be differentiated from Ménière's disease most readily by hearing tests, especially by tests for discrimination of spoken words. In addition, spontaneous nystagmus is often associated with these tumors but is absent in Ménière's disease except immediately following a crisis of the disorder.

Disorders in Which Dizziness of Syncope May Be Present

Carotid Sinus Syndrome.—This condition is a form of syncope dependent on a rather sudden ischemic state of the arterial system. In the classic case of syncope, unconsciousness is at times associated with mild clonic convulsions. If, however, the ischemic state of the central nervous system is mild, lightheadedness, weakness, dizziness, scintillating scotomas, dimness of vision, unsteadiness and nausea and vomiting may be the incomplete forms. These manifestations are produced by variations of pressure within the carotid sinus. Because in instances of hyperactive carotid sinus reflex, minor stimuli, such as from a tight collar, may be sufficient to produce the syndrome, the attacks are episodic in nature and are readily confused by some patients with attacks of vertigo.

Dizziness With Neurocirculatory Asthenia.—A train of symptoms almost identical with those enumerated just above is produced in some individuals by suddenly sitting or standing up after lying down for a considerable period. This appears to be due to lack of vasomotor compensation for the demand for increased vascular tonus produced by the sudden change of position. These attacks may also be confused by patients with attacks of true rotatory vertigo, especially if the word "dizziness" is selected as a synonym for both.

Summary and Conclusions

Lack of differential definition between the terms "vertigo," "dizziness" and several other terms which are incorrectly used as synonyms has resulted in the failure of these symptoms to constitute the valuable differential tool they might become. Proper definition of vertigo as a sense of whirling of the outside world or of the entire individual allows the term to be restricted to sensations arising from the vestibular system, comprised by the end organ, the vestibular nuclei and their central connections.

The term "dizziness," confined to a sense of motion within the head with a dimming of visual and auditory sensation, can be assigned to those symptoms arising from temporary cerebral ischemia, and both vertigo and dizziness can be differentiated from the sensation of unsteadiness produced by incoördination resulting from suppression or irritation of extralabyrinthine equilibrial reflexes. The examiner should never be satisfied with a monoverbal reply but should endeavor to get a clear mental picture of the sensation felt by the patient, because the laity are universally confused as to the meaning of these terms. If this is done, a useful diagnostic tool is secured.

Conditions in which vertigo and dizziness are prominent symptoms are briefly reviewed.

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PHARYNGEAL INFECTION COMPLICATED BY EROSION OF THE INTERNAL JUGULAR VEIN

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SEVERE or fatal hemorrhages following pharyngeal infections are the direct result of severe infection and suppuration in the parapharyngeal space. They are an end result of a suppurative adenitis involving the lymph nodes in the upper retropharyngeal space. These may be secondarily infected from any of the areas from which they receive their afferent lymph flow but most frequently follow acute pharyngitis, tonsillar or peritonsillar inflammation. The infection may also be carried by the blood through thrombosed veins from the tonsillar plexus or may result from direct continuity of tissue. The invading organisms usually belong to the streptococci group but may be others commonly found in the mouth. A severe infection develops in the retropharyngeal spaces with possible secondary involvement and erosion of a blood vessel by direct extension of infection, there being a very close anatomical relationship between the common and internal carotid arteries, the internal jugular vein and the extensive lymphatic system in the retropharyngeal space.

A knowledge of the anatomy of the parapharyngeal space is essential for a good understanding of this condition. It extends from the base of the skull above to the posterior mediastinum below and lies between the pharynx anteriorly and the vertebral column posteriorly. The deep cervical fascia bounds it anteriorly and posteriorly, blending with the sheaths of the great vessels laterally. Processes from its under surface divide the space into compartments and limit the spread of pus. The most important of these is the central or visceral, which extends from the base of the skull to the posterior mediastinum behind and from the hyoid bone to the superior mediastinum in front. It is bounded anteriorly by the pretracheal fascia, posteriorly by the prevertebral fascia and laterally by the fascia containing the blood vessels. This compartment contains connective tissue and fat, the ninth to twelfth nerves, the sympathetic nerves, the common and internal carotid arteries, the internal jugular vein and numerous lymphatics and lymph nodes. Some glands lie close to the internal carotid artery where it enters the carotid canal. Others lie along the internal jugular vein and at its junction with the common facial vein. Lymphatic vessels pass from the tonsils and throat to these deep cervical glands.

Schroder[13] divides parapharyngeal suppurations into two main groups, anterior and posterior. The latter is further subdivided into a posterior superior and a posterior inferior. Pus from the anterior and posterior superior groups cannot pass down to the mediastinum, but posterior inferior suppurations only originate from the lymphatic glands along the jugular vein and may pass down along the sheath of the vessels of the neck to the mediastinum. Both lymphatic vessels and glands may be involved.

Either pharyngitis or tonsillitis may cause suppuration in the adjacent tissues with resultant retropharyngeal or peritonsillar abscess. The internal carotid artery lies much closer to the pharyngeal wall than the external and is therefore much more frequently involved. Retropharyngeal abscesses may vary in size from an almond to a walnut, may gravitate deeply into the hypopharynx, or may rarely cause death by necrosis and erosion of the carotid artery or internal jugular vein. A peritonsillar abscess may cause at least three forms of infection. A septic thrombophlebitis in the internal jugular vein may start in the peritonsillar connective tissue and the venous plexus of the tonsillar bed. It may also follow inflammation of the lymphatic glands on the wall of the vein or inflammation and suppuration of the glands along the jugular vein may be carried by lymphatics passing from the tonsillar bed to the glands. It is generally believed that the encasing fascial sheath protects blood vessels from adjacent infection. The protective mechanism of arteries and veins differs however. When an artery is involved, the vessel wall is so damaged by the infection that its protective coat is weakened and becomes slowly distended. It may directly perforate or a pseudoaneurysm may form and suddenly rupture, causing serious or fatal hemorrhage. An infection eroding through the wall of a vein, however, may cause thrombosis within its

lumen, the venous walls being strengthened by a fibrinous deposit. While the venous wall may be eroded, hemorrhage will not usually occur if thrombosis has preceded the perforation.

Symptoms vary considerably. The patient may or may not be very septic and weak from the beginning, but any soft, smooth fluctuant swelling presenting in the lateral pharynx or at an angle of the jaw where pulsation is present must be considered suspicious as these indicate beginning leakage of blood and may precede sudden diffuse hemorrhage from the ear. A needle puncture may be a valuable help in diagnosis, but a negative puncture does not necessarily exclude aneurysm as the sac may be lined with heavy coaguli. Several minor pharyngeal hemorrhages may be followed by a serious or single fatal hemorrhage. Spontaneous hemorrhage from the tonsillar or pharyngeal areas is always a serious complication in cases having suppurative processes in those areas. Several hemorrhages may occur at intervals or a single large and immediately fatal hemorrhage. These patients do not cough up blood when they have a severe carotid hemorrhage, but bright red blood is projected from the mouth with great force. Erosion of the internal carotid artery has caused the hemorrhage in 70 per cent of cases. Mueller's observation[8] indicated that arterial hemorrhage is more frequent in adults, and venous in children. Salinger and Pearlman[12] reported that erosion of the internal jugular vein was found in fourteen of seventy-one autopsies of patients who died from hemorrhage following retropharyngeal abscess.

Abscess in the retropharyngeal space is usually readily diagnosed, especially in acute cases in adults. Roentgenograms are especially valuable but should be taken during inspiration in order that there may be air in the pharynx as well as the larynx and trachea with resulting better image.[7] Gradual but marked increase of swelling in the neck develops if erosion of a large vessel with escape of blood occurs. The blood may form a mass on the lateral wall of the pharynx, simulating a peritonsillar abscess. It may extend toward the base of the tongue and is frequently diagnosed as a peritonsillar or lateral pharyngeal abscess and incised. If only a variable amount of dark blood escapes, vascular damage is indicated. Trismus is characteristic of a peritonsillar abscess, but pharyngomaxillary involvement must be assumed if the abscess is incised and the trismus not relieved. Aural hemorrhage associated with pharyngomaxillary infection indicates carotid involvement. Pus deep in the neck may also be formed in association with hemorrhage from the throat or ear. The patient is then threatened by a possibly fatal edema of the larynx in addition to a fatal hemorrhage. Sudden rupture of an abscess into the larynx or trachea may also prove fatal.

Le Jeune and Steele[7] prefer massive parenteral penicillin therapy for cases of peritonsillar abscess unless spontaneous drainage is imminent. This treatment should be prolonged to prevent any tendency to relapse. The exact source of hemorrhage cannot be determined in advance, but it is usually from the common or internal carotid artery or jugular vein. Pharyngeal incision is useless in such cases. Immediate external exploratory incision, ligation of the bleeding point and determination of the condition of the internal jugular vein is the only safe procedure. Delay in cases of parapharyngeal abscess complicated by hemorrhage is usually fatal.

Case Report

D. B., an American white farm boy, aged fourteen, was hospitalized on April 28, 1950, on the service of a general surgeon.

History.—Chief complaint was swollen glands on the right side of the neck and bleeding from the mouth. About ten days before admittance the patient awakened with a sore throat. Three days later he felt much better and appeared to be recovering, but on the fifth day the soreness became more severe than it was at the onset. A swelling appeared on the right side of the neck and there was increasing difficulty in swallowing, talking and breathing. A short time before entering the hospital there was bleeding from the mouth.

Examination.—The patient appeared to be very ill and was bleeding moderately from the mouth. On the right side of the neck there were large, firm, confluent lymph nodes. The tongue, teeth and gums were normal. In the right tonsillar area there was a large mass which extended to the left, almost totally occluding the pharyngeal space. The temperature was 101.8°, pulse 76 and respirations 24. The lungs, heart, abdomen, and extremities were normal. Blood examination revealed: white blood cells 17,200, hemoglobin 12.6 gm., a differential of polymorphonuclear cells 84 per cent, lymphocytes 15 per cent. The urine analysis was negative, except microscopically there were 3 to 4 white blood cells and an occasional granular cast in a visual field. The blood pressure was 156/74. The mass in the pharynx was palpated by a gloved finger after which much pus and some blood escaped and the patient seemed somewhat relieved.

The treatment prescribed consisted of hot saline irrigations every two hours, warm moist packs to right side of neck, terramycin 250 mg. and penicillin 100,000 units intramuscularly every three hours.

Progress.—At 3:00 p.m. the patient had a severe hemorrhage from the mouth lasting several minutes. Whole blood intravenously was started at once. About 4:00 p.m. the nurse in charge reported that the patient was cyanotic and breathing with difficulty. At this time I was called in consultation and immediately performed a tracheotomy. The operation was carried out in the patient's room, as breathing had stopped and the patient had become unconscious. Upon opening the trachea, artificial respiration and the use of oxygen revived the patient. The temperature was 104.4°, pulse 140, respiration 24, and blood pressure was 110/55.

The tracheotomy tube was cleaned at varying intervals and on several occasions a moderate amount of blood was withdrawn from the trachea by suction. At 4:00 a.m. the following day, the nurse called and reported bleeding from the mouth and tracheal tube. Upon my arrival, the hemorrhage had stopped but there was evidence that the bleeding had been severe. Two similar incidences occurred during the next forty-eight hours.

Whole blood 500 cc. and glucose 5 per cent in saline intravenously were repeated several times. The temperature varied from 99.8° to 101.6°, the pulse from 88 to 120, and respirations from 20 to 28. The blood pressure readings were between 110/55 to 120/70. The patient was very alert and responsive, there was much less glandular swelling, and the pharyngeal space had become much freer. This made it possible to see a large ulcer posterior to the right posterior tonsillar pillar.

On the morning of the fourth hospital day the temperature by rectum was 100.8°, pulse 84, respirations 22, and blood pressure 130/90. At 6:00 a.m. hemorrhage from the mouth again set in and lasted several minutes, only to reappear in a short time. Pressure applied over the site of the ulcer failed to control the profuse bleeding, and the patient expired at 8:00 a.m.

At autopsy the pharynx, larynx, bronchial tree, and heart were exposed. Gross examination revealed atelectasis of both lower lobes of the lung, no doubt caused by aspirated blood. The pericardial cavity contained a moderate amount of colorless fluid. The specimen taken from the region of the pharyngeal area was a mass of necrotic tissue surrounding a ruptured wall of the internal jugular vein. Specimens were sent to a pathologist for microscopic study. The one taken from the bronchioles was reported to be mucus and pus. The section taken from the pharyngeal specimen was gangrenous tissue surrounding an erosion in a large vein.

Final Diagnosis.—Pharyngeal infection complicated by erosion of the internal jugular vein.

Cause of Death.—Secondary hemorrhage.

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VERTIGO

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History of Medicine In Minnesota

MEDICINE AND ITS PRACTITIONERS IN OLMSTED COUNTY PRIOR TO 1900

NORA H. GUTHREY
Rochester, Minnesota

(Conclusion)

Henry W. Wilkins (1838?-1866) had a short life and a brief professional career. He was one of the eleven children (of two marriages) of Darius Wilkins, a pioneer farmer of English descent who came to Minnesota from Vermont, via Illinois, and settled in Salem Township, Olmsted County, in 1855. Darius Wilkins was a Methodist, a Democrat, a justice of the peace and long a respected citizen of the county.

The following note appeared in the *Rochester City Post* of July 15, 1865, under date of June 26, ultimo: "Dr. Henry W. Wilkins, Physician and Surgeon, late assistant surgeon, U. S. N., respectfully begs leave to inform the citizens of Olmsted County that he has permanently located in Salem, and now offers his professional services in the practice of medicine and surgery. Calls promptly answered at all hours of day and night. Office hours from 10 a.m. to 2 p.m. for office patients. Office at Salem Cross Roads in the dwelling of Mr. John McDavis."

By October, 1865, Dr. Wilkins was in Rochester; in November he settled in Eyota, where he remained into February, 1866. He died by his own hand, from morphine, on December 16, 1866, at the Winona House, in Rochester, respite the efforts of Drs. R. M. Reynolds, E. C. Cross and W. W. Mayo to save him.

W. H. Willson, a homeopathic physician from Fond du Lac, Wisconsin, arrived in Byron, Olmsted County, in May, 1876, to practice "in company with Dr. Kendall" (Staunton B. Kendall, pioneer physician); this expression did not mean in partnership. At the same time Dr. I. H. Orcutt had come from Dodge Center to begin his initial practice and had announced that he perhaps would bring in a partner. The Byron contributor of personals to the Rochester newspapers said, "We welcome them all but fear that the unequalled health of our community will not furnish them the practice necessary for a living. They may get a few cases of whiskey cholera, but we hope not enough to keep them busy." In August, 1876, it was announced that Dr. Willson had returned to his former home in Wisconsin. In the Minnesota register of licensed physicians, for 1883-1890, appears the entry: "Willson, W. H. (H), Exemption Certificate."

Horace H. Witherstine (1850-1924) was from 1873 until his death a resident of Olmsted County and from 1886 a leading physician of the county and of Rochester. One of his old friends, a physician, has said, "He was the salt of the earth, vigorous, intelligent, kind, good to everyone."

The second of a family of five children (Charles, Horace, William, Margaret and Martha), Horace H. Witherstine was born in Herkimer County, New York, on April 14, 1850. His parents, David Witherstine and Margaret Petrie Wither-

stine, were of German descent. David Witherstine spent his life as a farmer and a writer for newspapers; his father, John Witherstine, was an American soldier during the Revolution and was present at the surrender of Cornwallis. Margaret Petrie Witherstine's father was a physician.

Horace H. Witherstine grew up on his father's farm, attended district school and Fairfield Academy, Fairfield, New York, from which he waas graduated in 1871. The following year he came to Minneapolis, Minnesota, where he took a course at the Minneapolis Business College. For the next ten years he taught school in or near Rochester. In January, 1877, with Professor and Mrs. Sanford Niles, Mr. Witherstine opened the Rochester Training School in Heaney's Hall; a year later he sold his interest to Mr. Niles. This institution, famous as Olmsted County's leading "select" school, in 1878 became the Rochester English and Classical School; it lives in memories as Niles Academy. Professor Witherstine from the autumn of 1878 was for three years principal of the schools of Elgin, Wabasha County, and for the three ensuing years was in charge of the schools of Dover, Olmsted County.

At Dover Horace H. Witherstine was married, on September 1, 1881, to Amelia T. Hatfield, who had been one of his pupils at the Rochester Training School. Mrs. Witherstine's father, William Henry Hatfield, of Scotch ancestry, was a native of Wyoming County, New York, a son of William and Paula Hatfield. Her mother, Martha E. Thompson Hatfield, born in Ohio, was a daughter of Benjamin and Mary Thompson, who were, respectively, English and German; Mr. and Mrs. Hatfield were married in Clinton, Iowa, in 1855 and shortly afterward came to Quincy Township, Olmsted County. Mr. and Mrs. H. H. Witherstine until 1886 made their home in Dover. Of their four children, William Horace was born in Dover, and Clarence Vernon, Glenn Sumner and Lela Margaret in Rochester.

In the autumn of 1884 Professor Witherstine, who had been reading medicine since 1882 in the intervals of pedagogy, began his formal training at Rush Medical College. He was graduated from Rush in June, 1886; on June 14 received from the Minnesota State Board of Medical Examiners certificate No. 1209 (R), and before July 1, 1886, had opened his first office in Rochester, over the leather store of Beardsley and Webster.

From the beginning of his practice Dr. Witherstine kept abreast of medical progress. He had been a student of the eminent Dr. Ephraim Fletcher Ingals at medical school and it has been noted that in 1887 he was applying in his practice Dr. Ingals' electric cautery for removal of nasal polypi in treatment for catarrh. At frequent intervals throughout his career he returned to Rush for postgraduate work, made clinical trips to eastern hospitals, and attended medical meetings. He was a member of the Olmsted County Medical Society (its secretary and treasurer, 1891); a founder of the Southern Minnesota Medical Association in 1892 (its secretary and treasurer, 1892-1898 and its president, 1899); a member of the Minnesota State Medical Society, he often was delegate to the American Medical Association, in which he was enrolled early in his career. In the medical journals of the state may be seen some of his contributions to the medical literature. As a preceptor he was helpful in the early nineties to at least two future physicians of southern Minnesota, Charles E. Fawcett, of Stewartville, and Homer F. Peirson, of Austin.

Dr. Witherstine did much to advance civic improvement. During his five terms as mayor of Rochester (1892-1902) he co-operated actively with the boards of

health, local and state, in all matters of public welfare, particularly in obtaining for Rochester an adequate sewerage system. For a time in this period he served as health officer in the absence of Dr. A. S. Adams. And, having himself narrowly escaped death twice in runaways caused by "yapping yellow curs," he advocated as a measure of public safety the destruction of "useless dogs." He was instrumental, in 1898, in organizing the Red Cross Society in Rochester and in the county. He was a member of the local board of the United States Bureau of Pensions, and was an examiner for leading insurance companies and for fraternal organizations. He once served as an alderman, was a member of the board of trade, and for twelve years was a member of the city board of education.

When in January, 1903, Dr. Witherstine resigned the mayoralty of Rochester, it was to take his seat in the state senate; Dr. Charles T. Granger became acting mayor, Dr. L. W. Beecher came from Chicago to carry the senator's medical practice. For eight years Dr. Witherstine served well in the legislature. Perhaps his two major achievements were the bill (passed in 1905) that provided for reciprocity among accredited physicians from outside Minnesota who desired to practice in the state, a measure that had far-reaching beneficial effect on medical education; and the bill (passed in 1907) for creation of a state board of examiners of nurses and for registration of duly qualified nurses. He was disappointed only in failure to bring about successful legislation against manufacture and distribution of cigarettes in Minnesota.

Dr. Witherstine was a member of the Independent Order of Odd Fellows. He stood high in the Masonic order as a member of Rochester Lodge No. 21 (A. F. and A. M.); of Halcyon Chapter No. 8, Royal Arch Masons; of Home Commandery No. 5, Knights Templar; and of Osman Temple, A. A. U. N. M. S., at St. Paul. For several years he was editor of the *Rochester Bulletin*. He and his family were supporting members of the Congregational Church of Rochester.

On October 2, 1924, at the age of seventy-two years, Dr. Witherstine died by accident when his automobile was overturned on the St. Paul road as he was on his way alone to make a rural call. He was survived by his wife and by three children: Dr. William H. Witherstine, of Grand Forks, North Dakota, and Glenn S. Witherstine, then editor of the *Rochester Bulletin*, and Lela M. (Mrs. Russell L.) Drake, both of Rochester. Mrs. Drake died on December 12, 1938.

When Dr. Witherstine died, Dr. William J. Mayo, his friend since 1877, wrote of him:

> In the death of Dr. Horace H. Witherstine the state of Minnesota has lost one of its foremost citizens, a man of broad sympathies who filled a legislative office with distinction. The death of this fine citizen will be felt keenly by the people of Rochester. A kindly, friendly man, interested in everything that would contribute to the welfare of the city, he was known to practically every man, woman and child in Rochester and the surrounding country. For nearly forty years he was a wise counsellor, a loyal friend. To his large clientele who knew him so well personnally and depended on him for medical advice, his death comes as a shock. As a medical man he stood high in the state, and he made a number of valuable contributions to medical progress. It can be truly said of him that he was a great physician, interested only in the patient's welfare. Night and day he was at the service of the sick, never sparing himself and quite without regard as to whether or not he would be paid for the services he so generously rendered. Personally, I shall miss him very much. Our friendship dated back to the beginnings when he was a professor in Niles Academy and there, after leaving high school, I was one of his pupils. In the many years which gave almost daily contact, I learned to know the man and to love him.

Mrs. H. H. Witherstine, who for many years was prominent in church and civic work and in the educational program of the federated women's clubs of

Minnesota, died at St. Mary's Hospital, in Rochester, on September 4, 1949. She was survived by her son, Dr. William H. Witherstine, an able physician and surgeon of Grand Forks, and Glenn Sumner Withers (name legally changed from Witherstine), who since 1925 has been editor and publisher (president of the company) of the *Rochester Post-Bulletin.*

William H. Withrow, a native of Midway, Kentucky, it is believed, was born about 1859. He was graduated from the College of Physicians and Surgeons of Keokuk, Iowa, in 1883 and was licensed in Minnesota on August 18, 1884, receiving certificate No. 950 (R). Dr. Withrow came from Minneapolis to Rochester, Olmsted County, in December, 1893, the seventeenth appointee to the staff of the Rochester State Hospital, as physician in charge of the drug room. Dr. A. F. Kilbourne, superintendent of the hospital, in his biennial report in 1894, said that Dr. Withrow in addition to his regular duties rendered valuable assistance to the medical staff.

Dr. Withrow has been described by his acquaintances in Rochester as dark, slight, of medium height, well bred, well educated and well liked. He left Rochester about 1898 to enter private practice at Spring Station, Kentucky; he had been licensed in Kentucky in 1893. There is evidence that he remained in Spring Station through 1909. His name disappeared from the directory of the American Medical Association prior to 1912.

L. N. Wood, typical in length of residence of many physicians who came to Minnesota in the early decades, remained in Rochester, Olmsted County, only a month. Dr. and Mrs. Wood arrived in July, 1876, he to practice medicine, she to teach music, it was announced. They presently returned to Chicago, where Mrs. Wood had secured "an engagement to sing in a leading church."

Cornelius S. Younglove (1824-1907), a native of New York State, was one of Olmsted County's earliest physicians and surgeons, a man of culture and a practitioner of skill in his day. From Dixon, Lee County, Illinois, he arrived in Rochester late in 1856, when the settlement was little more than a cluster of small buildings in the wooded Zumbro valley. One of the first newspaper comments observed, pertinent to the present history, mentioned this physician: A resident of High Forest Township living eight miles from Rochester had suffered a severe gunshot wound of thigh and leg from a Sharp's rifle; the patient was under the care of Dr. C. S. Younglove and was doing well.

A son of Cornelius Younglove, whose forebears came from England to America in the sailing vessel, the *Hopewell,* Cornelius S. Younglove was born at Hammondsport, at the southern tip of Lake Keuka, in Steuben County, New York, on November 29, 1824. (One source gives Pleasant Valley, a few miles west of Hammondsport, as his birthplace.) He was educated in the common schools, probably at an academy also, as was the custom of the day, at the Geneva Medical College, and at the Albany Medical College, from which he was graduated in 1848. For a time he followed his profession at Hammondsport and Pleasant Valley before removing to Dixon, Illinois, where he practiced several years.

On October 20, 1856, Cornelius S. Younglove was married at Monroe, Green County, Wisconsin, to Kate E. Brundage; the Brundage family, of Welsh ancestry, were sturdy folk of upright character who settled first near Wilkesbarre, Pennsylvania, later removed to Pleasant Valley, New York, and some of them thence to Wisconsin.

Immediately after their marriage Dr. and Mrs. Younglove came to Minnesota. Their two daughters, Emma and Alice, were born in Rochester and were educated there in the public schools before attending college in the East. Both became school teachers of ability, Emma on the staff of the Rochester High School and Alice at Fisher University. A nephew of Dr. Younglove, Norton C. Younglove, also of Steuben County, New York, came to Rochester in 1856 from Davenport, Iowa, at the age of twenty years. He became one of the early merchants in Rochester. For many years, in 1947, his sons and their families had been residents in California and Washington.

For about twelve years, from 1856, Dr. Younglove carried on a heavy medical and surgical practice. He has been pictured as a slight man, of medium height, fair-complexioned and blue-eyed, who used spectacles and wore a short beard. Never strong, when in the late eighteen sixties his health began to fail under the stress of pioneer medical practice, he gave up his professional career and opened a store for the sale of sewing machines and musical instruments. In late 1868 he built on College Hill a home that the local press described as an elegant brick dwelling of two stories; this house stood for many decades at what is now the southwest corner of Fourth Street, S. W. and Seventh Avenue. Dr. Younglove was a Mason and a supporting member of the Congregational Church. In 1871-1875 he was a member of the city board of education. A courteous, kindly, Christian man, all his life he was loved and respected.

In the late seventies Dr. Younglove and his family began to spend the winters in California, where relatives from both the Brundage and the Younglove sides had preceded them, and in July, 1892, they removed to that state. Until 1894 they lived in Santa Rosa and thereafter in Ventura, where Dr. Younglove died on May 29, 1907, aged eighty-two years and six months. After the death of Miss Alice, also in Ventura, Mrs. Younglove and Miss Emma removed to Claremont, where they spent the remainder of their lives.

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NOTE: Reprints of "Medicine and Its Practitioners in Olmsted County Prior to 1900" will be made available if a sufficient number of orders are received by October 15, 1951. If interested, address MINNESOTA MEDICINE, Publication Office, 2642 University Avenue, Saint Paul 4, Minn.

President's Letter

CHRONIC ILLNESS

IT SEEMS paradoxical that many chronic illness cases are due to the fact that modern medicine has saved these patients from earlier death, only to have them become chronic invalids. Of such, are the severe polio cases, found in small numbers; survivors of some acute surgical conditions and cancer cases successfully treated. Accidents cause an increasing number of incurable conditions because of spinal or cerebral injuries. Rheumatism, with its heart sequelae, is in a place by itself because of its crippling effects on the hearts of young patients. Later arthritis, in its various forms, brings cases of crippling and deformity.

We have rightly taken pride in the marked improvement in longevity rates in the United States. At times the added years are not much to the advantage of the indivdual if he is crippled by arthritis, mentally ill from cerebral vascular disease, or suffering from a slow degenerating process of other chronic illnesses. There is little gain for the old patient with an arrested illness who is an invalid because of its sequelae.

A detailed study of this problem, state and national in scope, is being initiated. Recently a new and active interest has been shown in the value of the lives of the chronically ill. The Minnesota State Medical Association has this year named a Committee on Chronic Illness. This Committee will study the matter and will present a report of their findings. Because the number of chronically ill persons occurs in a direct ratio to their ages, the study of gerontology assumes great importance in studies of older age groups. Patients in rest homes need more than mere food and shelter. Most doctors have seen the rapid decadence of these old folks when they begin to lose interest in life, until, finally, their continued existence is a matter of indifference. Research will be made on measures for prevention and early detection of chronic disease and treatment.

Action to promote human welfare lags further behind established knowledge in gerontology than in any other field, according to the 1950 Conference on Aging. The Commission on Chronic Illness, in co-operation with the National Organization for Public Health Nursing, will make a survey of chronic illness activities of public health organizations. This study will include a survey of the type of nursing this group of chronically ill patients is receiving. A questionnaire will attempt to get information on unmet demands or needs for nursing services for this group.

The Commission on Chronic Illness has been functioning now for some time. Through it much information will be obtained on various types of chronic illness. These findings will be carefully studied and the result of such study will be made available to the members of the profession. It will include not only a survey of the number of chronically ill persons, but an attempt will be made to classify causes of such invalidism and to find measures for the prevention of such illness. The Commission is made up of representatives from the following: American Hospital Association, American Medical Association, American Public Health Association and American Public Welfare Association.

The work being done in the large clinics, University Hospitals and others, and in the Veterans Administration in this state, shows remarkable results in cases of spastic conditions and partial paralysis. Many are no longer helpless invalids and can return to some productive occupation or profession even though still handicapped. Thus, there is evidence that something is being done for the chronically handicapped person to make his life one of interest to himself, and to prevent further deterioration.

J. F. Norman

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

ARTIFICIAL RESPIRATION

IN CASES of drowning or electric shock, the importance of instituting artificial respiration promptly and persisting with it until the certain signs of death, such as portmortem lividity and rigor mortis, appear cannot be too strongly emphasized. Even physicians who are supposed to be able to recognize the absence of life may be fooled following a drowning or high voltage shock and may not appreciate that there is a considerable period in such a situation during which artificial respiration may be successful.

Stefan Jellinek, former professor of electropathology at the University of Vienna and now working at Queens College, Oxford, in a recent article entitled "Artificial Respiration" which appeared in the July issue of the *Scientific American,* calls attention to the need for perseverance and the use of the Sylvester, not the Schaefer, method. He should know whereof he writes.

According to Jellinek, the cessation of respiration and heart beat as determined by the physician do not indicate the uselessness of artificial respiration. The period during which the victim can be resuscitated is indefinite, but victims have been saved after an hour or more of manipulation. The author prefers the Sylvester method with the subject on his back, pulling the arms outward and upward to expand the chest and then allowing them to fall back on the chest. He argues logically that this is the more physiological method, as expansion is normally the active process and there is danger of impeding the return of the blood to the heart with too strong a compression of the chest by the Schaefer method with the victim on his abdomen. The main objection to the Sylvester method is the swallowing of the tongue and obstruction to respiration due to the supine position. This has to be prevented by pulling the tongue forward by means of a forceps or safety-pin.

The author mentions the part that fear can play from an electric shock particularly. Susceptibility to electric shock varies enormously. The author has touched wires carrying 110 volts and has worked up to 440 volts without sustaining injury, whereas this voltage usually kills. Preparation for the shock eliminates the mental factor of fear.

Incidentally, there is reason to believe, too, that shock following fear, not muscle cramp, is the important factor in many drownings.

The author concludes that even an apparently lifeless victim of an electrical or drowning accident must be regarded and treated as capable of resusicitation, however hopeless the case may seem to be even to an experienced physician.

THE WOMAN'S AUXILIARY AS AN AID IN OPPOSING COMPULSORY HEALTH INSURANCE

THE NATIONAL Education Campaign which has been conducted by the AMA will come to a close at the end of the year. At the request of the House of Delegates, a nucleus of the campaign staff will be maintained ready to meet any further threats of socialistic moves against medicine. We may be sure some threats will be cropping up which will need counter action. In fact, there is evidence at present that efforts are still being made to further socialized medicine. To mention a few: the bill before Congress to provide free hospital care for all over sixty-five eligible for Social Security; the provision of medical care to veterans for non-service-connected disabilities without too much concern as to inability to pay for private care, which policy has grave possibilities with the institution of compulsory universal military service; activities of labor leaders to obtain endorsement of compulsory sickness insurance; misleading statements as to the medical care provided in this country.

It is gratifying to know that so many national organizations have gone on record as opposed to compulsory health insurance. It is not surprising perhaps that organizations of associated professions or industry such as the dentists, nurses, pharmacists and hospitals, are lending their sup-

port to the physicians' campaign for free enterprise. It is especially gratifying to see included in the list national organizations such as the American Association of Small Business, the American Bar Association, the American Farm Bureau Federation, the American Legion, the American Meat Institute, the American National Live Stock Association, the American Retail Coal Association, the American Trucking Association, the American Wholesale Lumber Association, the Associated General Contractors of America, the Certified Milk Producers Association of America, the Conference of American Small Business Organizations, the General Federation of Women's Clubs, the Insurance Economics Society of America, Kiwanis International, the National Asociation of Insurance Agents, the National Association of Life Underwriters, the National Federation of Business and Professional Women's Clubs, the National Federation of Independent Business, the National Retail Hardware Association, the National Small Business Men's Association, The United Brotherhood of Carpenters and Joiners of America, the U. S. Chamber of Commerce, the Veterans of Foreign Wars.

The list of organizations which have passed resolutions opposing Compulsory Health Insurance in the cities, counties and State of Minnesota is just as long as the list of national organizations. It should be much longer, and adding to the list is an objective which is being offered to the State and County Women's Medical Auxiliaries. All Auxiliary members have received informative material as to procedure and are urged to have local organizations to which they have contact pass resolutions opposing compulsory health insurance. The longer the list of organizations supporting the stand of the medical profession, the better will the efforts of the socialistic planners, who are endeavoring to obtain organizational support in favor of compulsory health insurance, be counteracted.

THIS TOPSY TURVY WORLD

LESS than a decade ago we were allied with Russia and presenting her with billions of dollars worth of material in our common cause opposing Hitler. Today we are organizing Western Europe, including Western Germany, to oppose the Russians under Stalin.

Less than a decade ago we were supporting China, more or less, in her fight for survival against the Japanese. Today it becomes necessary to combine against a Communist China to save Japan and non-Communist Asia.

It used to be a virtue to work hard, save money, invest judiciously and have a reserve for old age and to hand down to the next generation. Today a hard worker is too often frowned upon by his fellow workmen, and a forty-hour, five-day work week is considered enough labor for most industry. Certain incentives to save, such as the need for food, raiment and housing, still exist and probably always will, unless we have these items provided by a Communistic government. In this case, force will be the most powerful incentive. The graduated income and inheritance tax has resulted in less incentive to save and invest. The revised income tax law already passed by the House and up for action by the Senate early in September will further reduce the incentive to increase one's salary or income. A point will soon be reached where there will be no reason for investing so-called risk capital. This will be the end of the so-called capitalistic system.

The avoidance of debt used to be a virtue. For the past ten years, the borrower who now can pay back his loan in depreciated currency has been the wise financier.

To purchase annuities for security in old age used to be considered wise. Low returns on conservative investments has resulted in poorer returns on mutual insurance policies in dollars' worth, in some instances half as much as those invested.

To be able to leave a substantial estate to one's widow and children used to be considered an indication of success. Today anyone who leaves a large fortune to be subjected to inheritance taxes is lacking in astuteness, to say the least.

While there were some aspects of the "good old days" which we are well rid of, the present topsy turvy situation as regards certain fundamental virtues is distressing.

INJECTIONS AND POLIOMYELITIS

Poliomyelitis is a serious disease that occurs each year in Minnesota. Reported cases in a year may be as few as twenty-two or as high as 2,881. About 7 per

From the section of Preventable Diseases, Minnesota Department of Health.

cent of the patients reported die. Careful consideration must be given to any measure which may have an influence on the incidence or outcome of the disease.

Throat operations have been shown to be such an influence. Persons who have poliomyelitis after the removal of tonsils and adenoids usually have the worst form of the disease (bulbar), and death in this form is frequent. It is now general practice to advise the postponement of elective throat operations during the poliomyelitis season in those areas where the disease is increasing, or has reached a high incidence. Such postponement seldom causes any real harm to the individual.

Recently, attention has been drawn to the possible adverse influence of injections on the outcome of poliomyelitis. There is evidence from several areas that persons who develop poliomyelitis within a month after receipt by injection of an antigen, such as diphtheria toxoid, or of other materials, such as penicillin or liver extract, show increased frequency of paralysis in the extremity into which the injection was given. The risk of getting paralytic poliomyelitis is increased by the procedure of injection.

This raises the question—should injections be omitted or postponed? In regard to injections of immunizing antigens, it is important to weigh the danger of such procedure. Many years of promoting immunizations has resulted in reducing deaths from diphtheria in Minnesota from several hundred each year to less than ten, and whooping cough to less than fifteen. Neglect of immunizations could easily increase the number of deaths from these and other preventable diseases, such as tetanus and smallpox, to well over the number of poliomyelitis deaths occurring even in epidemic years. Immunization procedures should continue to be furthered by every available means, in view of the positive benefits produced, but the timing of such injections should be limited to those months when poliomyelitis is not present in the community. In any case, the danger is not to life but to some degree of increase in paralysis of the limb injected.

An exception to this procedure may be made for infants under six month of age for two reasons: first, the incidence of poliomyelitis in this age group is very small; second, modern pediatric practice urges that initial immunization against diphtheria, pertussis, tetanus, and smallpox be started by three or four months of age. Thus the hazard to this age group should be minimal.

Certain prophylactic antigen injections cannot be postponed. The following are examples: immunizations of persons traveling abroad; tetanus antitoxin or toxoid following injuries; rabies vaccine following a bite of a rabid animal; diphtheria antitoxin for prophylaxis; gamma globulin for modification of measles; allergens used in testing and treating allergic patients.

In regard to the injection of other materials for diagnostic or therapeutic purposes in medical practice, the association of such injections with the development of paralysis in poliomyelitis has been reported as of the same order as when immunizing materials are used. Such injections are seldom elective and cannot be postponed. The risk in their use is to be compared with the known benefits to the patients offered by the antibiotics, insulin, antitoxin, and other therapeutic agents.

Finally, it may be emphasized that the danger of injections described above applies only during the time that poliomyelitis is itself prevalent in a locality to an extent that it also constitutes an unusual hazard to the individual. The incubation period of poliomyelitis, during which this hazard is present but unrecognizable, does not seem to exceed one month. In this regard, other factors which produce general or localized trauma or fatigue during the incubation period may equally increase the severity of the resulting disease. Excessive physical strain, or violent exercise are such factors and should be avoided during an epidemic, or in case of known exposure.

ACUTE RHEUMATIC FEVER TREATED WITH CORTISONE AND ACTH

(Continued from Page 854)

whether cardiac injury has been sustained and to evaluate the extent of the injury when present.

Other effects observed were marked improvement in appetite and morale, gain in weight, temporary production of moon-shaped facies, appearance or aggravation of acne, occurrence of white and reddish-purple striations over the thighs and buttocks, and amenorrhea among patients whose menses had become established. In only one case was it necessary to discontinue the use of these hormones temporarily, and in that instance it was owing to the use of an unsatisfactory preparation of ACTH.

In one case, organic valvular defects and cardiac hypertrophy resulting from previous attacks of rheumatic fever were not modified by administration of cortisone. These hormones did not render patients immune to recurrence of acute rheumatic fever. Recurrences have occurred in two of our cases.

Our experience gives rise to considerable hope that the early and adequate administration of cortisone or ACTH to patients in initial and subsequent recurrent attacks of rheumatic fever will probably prevent or markedly minimize permanent cardiac injury in the large majority of instances. These patients and many other patients with acute rheumatic fever will have to be treated and followed over long periods of time before it can be determined whether cortisone or ACTH actually prevents patients with acute rheumatic fever from developing chronic rheumatic heart disease.

Medical Economics

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

INCOME SURVEY STIRS COMMENT

As was anticipated by many vitally concerned with the recent survey on the United States physicians' incomes, comment has been varied and wide. Physicians in Minnesota have found themselves the focal point of the nation, and many have felt that they are being accused of exhorbitant fee charging because this state has come up with the highest average net income in the nation —$13,175. However, the reasons behind this latest figure for 1949 incomes are somewhat complicated and should be studied in the light of added data and further analysis.

The survey, conducted jointly by the U. S. Department of Commerce and the Bureau of Medical Economic Research of the American Medical Association, was based on the replies of 55,000 physicians out of a possible 125,000 who were contacted. This response was termed by the American Medical Association as "the best and broadest mail questionnaire income survey ever taken of any profession." Frank G. Dickinson, Ph.D., Director of the Bureau of Medical Economic Research of the AMA, said also, "This remarkable and unprecedented number and percentage of returns in a survey of professional incomes has exceeded all expectations and gives the study an importance unique in the history of mail income surveys." Physicians can conclude, then, that the study is based on representative, authoritative and accurate figures, and they can rely on all conclusions which people in a position to know have drawn from the survey.

Average Income Doubled

First of all, the study showed that the average net income for physicians in 1949 was $11,058. Dr. Dickinson reports that probably the most significant information of the survey is that, in the twenty-year period since 1929, the average net income of all civilian physicians more than *doubled*, but this relative increase was practically identical with that for all wage earners in the general population over the same period.

The study showed conclusively that physicians in medium size communities fared better financially than their colleagues in the big cities. An editorial in *The Journal of the American Medical Association* comments:

> "The study is replete with evidence that the highest average incomes are not being earned by physicians in the large metropolitan cities. This information should buttress the argument of the many physicians and lay leaders interested in improving medical care in the smaller cities and towns of the rural parts of the country."

The survey brought out certain differences in income average of the general practitioner and the full-time specialist. The average net income (before taxes) of general practitioners in independent practice was $8,835, as compared with $15,014 for full-time specialists. This is explained by the AMA: "the income margin between specialists and general practitioners may or may not have a dollar value sufficient to offset the extra financial sacrifice during three or four years of additional training at nominal salary, or the personal sacrifice at a time in life when most young men are starting . . . to have a family. Furthermore, the tendency of specialists to locate in the larger cities where family living costs are higher may offset some of the extra earnings of specialists. . . ."

Refutes Physician Shortage Claim

The Journal of the American Medical Association declares editorially that the survey sufficiently refutes claims that there is a doctor shortage in the nation. *The Journal* says:

> "In the larger sense this study demonstrates again that there was no nation-wide shortage of physicians in 1949, for physicians' incomes had risen just about as fast percentagewise as the average income of the American people. The mean and median net incomes of physicians in 1949 would have been far higher if there had

been a nation-wide shortage of physicians. On the other hand, this study provides much evidence of the economic advantages of practicing medicine in the small and medium-sized cities and, indirectly, may suggest to some an over-supply of physicians in metropolitan centers."

The survey is based purely on accurate satistical analysis, which involves terms which may or may not be familiar to physicians. Figures are given for the "mean" and "median" net incomes. The mean is the statistical average, while the median is the half-way point, i.e., half of the physicians reporting had a higher income than this figure and half had a lower income than this figure. Dr. Dickinson pointed out that many statisticians consider the median a more representative value than the mean in income statistics for most occupational groups.

Minnesota's Average Explained

Why is the Minnesota doctor's income average so much higher? The answer is given carefully and reasonably by Dr. Dickinson, who is nationally known for his accurate and dependable analyses of facts and figures.

Of the 55,000 replies received, nearly 30,000 were completely analyzed. Of these 30,000, 77.7 per cent were from physicians who derived more than half of their medical income from independent practice and 22.3 per cent were from physicians who derived more than half of their income from salaries. However, Dr. Dickinson reports:

"The returns from Minnesota were far different: 66.5 per cent came from Minnesota physicians in independent practice—11.2 percentage points *below* the national average. On the other hand, 33.5 per cent of the Minnesota physicians were in salaried practice, which is 11.2 per centage points *above* the national proportion of our returns. Thus my first conclusion is that in this survey a disproportionately large percentage of the returns from Minnesota was from physicians in salaried practice."

The returns from full-time specialists showed that Minnesota had a percentage about equal to the national percentage, 46 and 45.8, respectively. This shows that Minnesota is typical of the nation in the percentage of all physicians who are fully specialized.

The study was also divided into three other parts: 66.6 per cent were in non-salaried practice (no income from salaries); 16.8 per cent were in part-salaried practice (1 to 99 per cent from salary), and 16.6 per cent were in "all-salaried" practice. These three figures for doctors in Minnesota were 57.2 per cent, 13.8 per cent and 29 per cent. Thus Dr. Dickinson has concluded that Minnesota's percentage is low on non-salaried, low on part-salaried, but distinctly high on all-salaried.

Let it be said at this point that Dr. Dickinson and his staff can only make conclusions on the information from those physicians who replied to the questionnaire. However, since such a large percentage did reply to the survey, and since an accurate picture can be drawn, statistically, from a lesser amount in a cross-section survey, it is reasonable to assume that the figures are generally representative.

Further explanation is given by Dr. Dickinson for Minnesota's high average physician income:

"Only 60.3 per cent of the national sum of the part-salaried and the all-salaried were full-time specialists, but in Minnesota 70.4 per cent of the sum of the part and all-salaried physicians were full-time specialists. Not only were the returns from Minnesota extremely high percentagewise for all-salaried physicians (29 per cent versus 16.6 per cent) but on top of that, the per cent of full-time specialists in the all-salaried plus the part-salaried combination was far above the national proportion (70.4 per cent versus 60.3 per cent)."

Based on these findings, Dr. Dickinson concludes that the explanation for the premier ranking of Minnesota is not due to the physicians who receive more than half of their incomes from fees, but is due to the high average for physicians who receive more than 50 per cent of their income from salaries. He also says that it would be unreasonable to read into these figures any notion that fee schedules are extremely high in Minnesota. Recent increases in the incomes of physicians are due to a moderate rise in fee schedules, better collections and a remarkable increase in "output per physician."

In making his final conclusions concerning Minnesota's position in the national physician income survey, Dr. Dickinson said: "The mean (average) net income of physicians in salaried practice in Minnesota is far above that of any other state because the proportion of those who are full-time specialists in salaried practice is unusually and abnormally high as compared with the entire nation, and their mean net income was 41 per cent higher in the U. S. than that of general practition-

ers in salaried practice. Thus the real reason for the mean net income of *all* physicians in Minnesota—$13,175—being higher than that for any other state is traceable directly to the fact that our survey obtained such a high proportion of full-time specialists in salaried practice in Minnesota. . . . Minnesota is blessed with many well-paid full-time specialists who are in salaried practice."

MEDICAL-DENTAL CARE NOTED FOR AIR FORCE PERSONNEL

The United States Air Force is responsible for the provision of medical and dental care to United States Air Force military personnel on active duty, and to their dependents in so far as facilities are available. Whenever it is feasible and practicable for Air Force personnel to receive medical care at Air Force medical installations they should do so. Conversely, Air Force medical installations provide medical and dental care to all Air Force personnel who may be assigned in the area, whether or not these personnel may be assigned to the particular Air Force base.

Naturally, it is not possible to have USAF medical installations readily accessible to personnel in every geographical location. In those locations where we do not have such facilities, it is necessary to depend on other governmental or civilian agencies for these services. Those agencies include medical and dental services of the Armed Forces (Army and Navy), and other federal agencies, such as the Veterans Administration and the United States Public Health Service. When medical and dental services of government agencies are not available, care may be obtained from civilian sources at no expense to the individual, provided such care is a necessity and an emergency. Only active duty Air Force personnel on duty, leave or informal leave (pass status) or those people stationed where no other military or federal medical installation is available may utilize civilian medical care at Air Force expense. USAF military personnel absent without official leave (AWOL) are not authorized civilian medical care, but can receive treatment at any military installation. Dependents of active duty Air Force personnel are not authorized civilian medical care at Air Force expense.

All bills for services, including ambulance charges, rendered USAF military personnel by civilian physicians or medical facilities will include:

1. Full name, rank, service number and organization to which assigned for duty.
2. Duty status of patient, if known, i.e., duty, leave, or informal leave (pass).
3. Inclusive dates of treatment if hospitalized, otherwise, date and place of treatment.
4. Diagnosis.
5. Charges (itemized separately for services, drugs, x-rays, etc.).
6. A statement certifying that the bill is correct and just; that payment has not been received; that the services rendered and the medicine furnished were necessary; and that charges do not exceed those customary in the vicinity.

Payment for medical and dental service properly submitted from civilian sources to USAF military installations will be accomplished promptly after receipt of necessary authenticated vouchers. The civilian physician is advised to send the bill for services rendered directly to the Commanding Officer of the nearest Air Force Base.

THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul 2, Minnesota

Julian F. DuBois, M.D., Secretary

LICENSE OF SPRING VALLEY PHYSICIAN SUSPENDED FOR TWO-YEAR PERIOD

Re. Louis W. Katzberg, M.D.

Following a hearing before the Minnesota State Board of Medical Examiners on July 20, 1951, the license to practice medicine held by Louis W. Katzberg, M.D., of Spring Valley, Minnesota, was suspended for a period of two years. Dr. Katzberg was charged with habitually and excessively indulging in the use of alcoholic liquors.

On August 14, 1951, Dr. Katzberg was found to be an inebriate person following a hearing in the Probate Court of Fillmore County, and was ordered committed to the Willmar State Hospital for treatment.

Dr. Katzberg is forty-seven years of age and a graduate of the Medical School of the University of Nebraska in 1932. Dr. Katzberg was licensed to practice medicine in Minnesota in 1935. He has practiced at Spring Valley since 1939.

DOCTORS NUMBER 209,040

The annual physician census of the AMA shows that the doctor population of the United States at the end of last year totaled 209,040. About 72 per cent of these, or 150,220, were in private practice. The other 58,820 were (1) in research, teaching, or administrative jobs; (2) in government service; (3) retired; or (4) interns or residents.

The total number of physicians was decreased by 3,794 deaths and increased by 6,002 new doctors, with a net gain of 2,208.—*Medical Economics,* August, 1951.

American Medical Association

House of Delegates—Summary of Proceedings

Atlantic City—June 11-15, 1951

The House of Delegates convened on Monday, June 11, in the American Room of the Traymore Hotel, Atlantic City, and was called to order by the Speaker, Dr. F. F. Borzell, at 10 a.m.

After preliminary proceedings including the invocation, the adoption of the minutes of the interim session, and the roll call, the House heard the address of the Speaker, presenting general directions and greetings. He then read the names of members and chairmen of the reference committees.

The House passed a resolution expressing regret at the death of Dr. Roy W. Fouts. Dr. Allen O. Whipple, New York, was elected as the recipient of the Distinguished Service Award. The House accepted a $2,000 gift from the American College of Radiology for the American Medical Education Fund.

The address of the President, Dr. Elmer L. Henderson, was then heard by the House. Dr. Henderson reminded members: "With the socialistic threat now dispelled, at least temporarily, I believe that this is a good time to remind both doctors and the public of the basic, long-range objectives of this organization. Stated briefly, those objectives are to promote the national health through scientific activities, to foster and maintain high standards of medical practice, and to solve health problems in a manner most conducive to the public welfare." He outlined the wide range of interests and programs of the American Medical Association.

Twelve Points Studied

Dr. Louis H. Bauer, Chairman of the Board of Trustees, presented his report. He reported that the net income in excess of expenses for 1950 is $27,800.45. Dr. Bauer's report also included recommendations and discussions of: exemptions from membership dues, hospital standardization, joint commission on accreditation of hospitals, inter-association Committee on Health, statement of maternal and child health, principles for the improvement and better distribution of nursing services, local health units for the nation, twelve point program, and public relations department expansion. All recommended actions and resolutions were referred to proper reference committees.

The report of the Board of Trustees was discussed section by section and approval was given to a policy endorsing aid to medical schools for construction only, and to the Board's statements on exemption from membership dues, expansion of public relations department, Student American Medical Association, appointment to membership on Council on Scientific Assembly, resolution on absentee ballot and the Treasurer's and Auditor's report.

The Reference Committee on Insurance and Medical Service recommended disapproval of the section of the Board of Trustee's report on the statements of the Inter-Association Committee on Health, but recommended continuation of the committee's activities.

Considerable discussion was given to the proposed Joint Commission on Accreditation of Hospitals. It was the recommendation of the Reference Committee on Medical Education and Hospitals that support should be given the Board of Trustees in their attempt to rearrange the voting power in this Commission to: three representatives of the American College of Surgeons; three representatives of the American College of Physicians; four representatives of the American Hospital Association, and eight representatives of the American Medical Association.

The supplementary report of the Board of Trustees was given by Dr. Louis H. Bauer, chairman, and each recommendation was referred to its proper reference committee.

Earmark Donations

Approval was given to: the recommendation that physicians may earmark medical education fund contributions for any medical school they desire; the resolution congratulating the National Broadcasting Company on its twenty-fifth anniversary; that the special committee to review the Twelve Point program be empowered to formulate a statement of policy that will guide the Association and constituent societies in implementing this program and in dealing with legislative proposals affecting medical welfare: appointment of an advisory committee to the Council on Medical Education and Hospitals to study the problem of discrepancy between the number of internships offered and the number of available candidates; appointment of a committee on nervous and mental diseases; the effort to induce the internal revenue department to authorize deduction of expenses incurred in postgraduate medical education by doctors, and a proposed change in the composition of the Council on Medical Service was disapproved and a recommendation was made that a special committee be appointed to review the organizational structure of standing committees.

Editors Give Plaque

The House then heard the report of the Secretary, Dr. George F. Lull. This was followed by the report of the Co-ordinating Committee which

was approved. A plaque from the National Editorial Association, commemorating the outstanding contribution to individual freedom and maintenance of the American way of life made by the American Medical Association, was presented.

Dr. Walter F. Donaldson, acting chairman of the Judicial Council, presented that council's report, which was approved.

The report of the Council on Medical Education and Hospitals was given by Dr. Herman G. Weiskotten, and approved by the House.

The secretary introduced to the House, Dr. A. Sharman of Glasgow, Scotland, the official delegate from the British Medical Association.

The House heard the report of the Council on Medical Service, Dr. James R. McVay, Chairman, reporting. This report was approved, including a proposed project, "You and Your AMA" to be included in the annual meeting programs of constituent state societies, designed to inform doctors of the many functions and services of the American Medical Association.

The House adopted an amendment to the By-Laws changing the composition of the Board of Trustees to include the President and the President-Elect.

Correlate Ads

The House approved a resolution recommending that all curative workshops and institutions providing physical therapy be under the direct supervision of a qualified physician. Approval was given a resolution recommending to advertising agencies that they make all efforts possible to correlate their advertising programs with the principles of the best practice of modern medicine.

The House passed a resolution approving the program of the National Society for the Prevention of Blindness for the promotion of research, education and preventive service.

The House approved a resolution endorsing a request to Congress to thoroughly investigate our entire school system, with particular reference to the teachers and authors of textbooks advocating the overthrow of the American system of free enterprise by the infiltration of un-American fallacies of collectivism.

Preceptorships Okayed

Approval was given the system of preceptorships, but it was recommended that they be continued on a state level and that details be left to individual deans' committees of medical schools, the local county or state medical society or local chapters of the Student American Medical Association.

The House approved a resolution commending the sponsoring medical societies for the program of Blue Shield plans they have initiated.

The House approved a resolution recommending that the American Medical Association consider the problem of shortened insurance reporting forms and collaborate with insurance companies to develop a shortened form.

The House approved a resolution recommending that the Council on Medical Service be directed to conduct a proposed study of relationships between the AMA and medical society-sponsored prepayment plans, and to submit its findings to the Interim Session.

The House approved a resolution calling for economy in federal government in conducting courses of postgraduate work for the medical profession.

The House approved a resolution requesting that the Council on Medical Education and Hospitals study the problem of multiplicity of medical meetings.

A resolution requesting establishment of single membership classification was referred to the committee on Constitution and By-Laws to make necessary changes allowing discontinuance of the term "Fellowship" and to report to the next meeting of the House.

Action on Dues

The House disapproved a resolution calling for acceptance of payment of 1951 dues regardless of payment of 1950 dues.

The House approved a resolution endorsing the use of advertising slogans and space for such slogans to place before the public the continuing story of medicine.

The House approved a resolution urging all doctors, regardless of type of practice, to participate in their community's emergency call plans, national specialty boards being requested to facilitate general participation by assuring members that such participation would not jeopardize specialty ratings.

The House approved a resolution expressing unalterable opposition to communism, nazism, fascism, state socialism or other forms of collectivism.

The House approved a change in the Constitution which would allow the five immediate past presidents of the American Medical Association to be members of the House of Delegates for five years with power to vote.

The House referred for implementation to its Interim Committee on Constitution and By-Laws, a resolution calling for establishment of a membership classification for both retired and emeritus members with relief from payment of dues.

The House adopted a resolution requesting the taking of immediate steps to inform the public, hospital trustees and the medical profession as to the facts pertaining to the practice of medicine in hospitals and the AMA principles governing the same.

The House referred a suggested set of standards, for permitting physicians to apply radium in hospitals, to the Council on Medical Education and Hospitals with the recommendation that they be distributed to hospitals in the United States.

The House voted to re-evaluate the position of the American Medical Association regarding delinquent 1950 dues. The House approved a resolution reaffirming the American Medical Association's policy to publish in the Journal discussion of controversial medical matters submitted by members.

The House then heard the report of the Interim Committee on Constitution and By-Laws, which presented recommended changes regarding associate membership, ex officio members of the House, number of delegates, annual dues, Section on Military Medicine, ex officio committee members, executive session.

Trustees' Report

The House heard the supplementary report of the Board of Trustees:

The House approved a resolution, presented by the Board of Trustees, reaffirming the Association's policy of belief in continued civilian control in medical and health phases of national defense through the Armed Forces Medical Policy Council of the Department of Defense.

The House voted approval of the Board of Trustees' suggestion to begin a study of the medical problems involved in the conduct of the new universal military training program.

The House approved the principle whereby the existing specialist centers within the Veterans Administration are used for the care of military personnel so severely disabled that their return to active duty is unlikely.

Dr. Louis H. Bauer, chairman of the Board of Trustees, presented the report of the Board on medical relations in Workmen's Compensation, which was accepted by the House, which recommended that the findings reported be used as a basis for further study.

Blood Bank Study

Dr. L. W. Larson, Chairman of the Committee on Blood Banks, presented his committee's report, which outlined a study on blood banks and blood procurement in the nation. The House approved this report.

The House heard the report of the Committee on Chronic Diseases, by Dr. Robertson Ward, Chairman, and heartily approved the all-inclusive study.

The House passed a resolution expressing appreciation to Whitaker and Baxter for their excellent campaign in the educational program.

Dr. Elmer L. Henderson presented a check for $10,000 from the Woman's Auxiliary to the American Medical Association for the American Medical Education Foundation, and a motion of thanks was passed.

Dr. Dwight H. Murray, Board of Trustees, presented a supplementary report of the Board, recommending that the 1952 dues be $25, including subscription to the Journal, expansion of the Association's activities in the field of physician placement in communities where difficulty in obtaining physician service is encountered, and approval of a letter to Dr. Howard Rusk, Chairman of the Health Resources Advisory Committee in the Office of Defense Mobilization urging that the committee recommend that deferments be limited to persons in those categories for which a need in the armed forces or a shortage in the civilian economy have been specifically established.

Dr. Murray also announced that the Board of Trustees had selected Miami, Florida, as the place for the 1954 Clinical Session.

The Speaker, Dr. F. F. Borzell, informed the House that the Board of Trustees had acceded to the expressed wish of the House that Whitaker and Baxter be retained.

Doctor Bauer Elected

Election of officers followed:

President-Elect—Louis H. Bauer, M.D., Hempstead, L. I., N. Y.
Vice President—Oscar B. Hunter, M.D., Washington, D. C.
Secretary—George F. Lull, M.D., Chicago.
Treasurer—J. J. Moore, M.D., Chicago.
Speaker, House of Delegates—F. F. Borzell, M.D., Philadelphia.
Vice Speaker, House of Delegates—James R. Reuling, M.D., Bayside, N. Y.

The House elected Dr. Walter B. Martin, Norfolk, Va., as a member of the Board of Trustees to succeed himself, and Dr. David B. Allman, Atlantic City, to succeed Dr. Louis H. Bauer.

The House elected Dr. Walter F. Donaldson, Pittsburgh, to succeed himself as a member of the Judicial Council.

Dr. Samuel P. Newman, Denver, was elected to succeed himself as a member of the Council on Scientific Assembly.

Dr. Franklin D. Murphy, Kansas City, Kansas, was elected to succeed Dr. W. S. Middleton as a member of the Council on Medical Education and Hospitals.

Dr. H. B. Mulholland, Charlottesville, Va., was elected to succeed himself as a member of the Council on Medical Service. The House elected Dr. Joseph D. McCarthy, Omaha, to succeed himself as a member of the Council on Medical Service.

Committee Selected

The House approved nominations for members of the permanent Committee on Constitution and By-Laws: Drs. James S. Stevenson, Tulsa, for a term expiring in 1952; Stanley H. Osborn, Hartford, Conn., for a term expiring in 1953; Floyd S. Winslow, Rochester, N. Y., for a term expiring in 1954; B. E. Pickett, Sr., Carrizo Springs, Texas, for a term expiring in 1955; Louis A. Buie, Rochester, Minn., for a term expiring in 1956; the president, the secretary, the assistant

(Continued on Page 906)

Minnesota Academy of Medicine

Meeting of January 10, 1951

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 10, 1951. Dinner was served at 7 p.m. and the meeting was called to order by the new president, William H. Hengstler, M.D., at 8:10 p.m.

There were forty-two members and one guest present.

Dr. William A. Hanson, Minneapolis, retiring president, then read his presidential address, entitled "Healing of Wounds with Special Regard to Disruption and Evisceration."

THE HEALING OF WOUNDS WITH SPECIAL REFERENCE TO DISRUPTION AND EVISCERATION

WILLIAM A. HANSON, M.D.

Minneapolis, Minnesota

Inasmuch as dehiscence, eventration, disruption, or evisceration is to be considered it seems appropriate to first stress the salient features of the healing of wounds, being cognizant of the fact that they have been reviewed and subjected to many investigations. We hope it will merit your interest and consideration and bring forth discussion.

The Healing of Wounds

It is obvious that many phases of the subject will necessarily have to be omitted and only the important features emphasized.

There is no known or generally available substance for general or local use which will accelerate the normal rate of wound healing. However, there are a number of adverse factors either local or systemic, or a combination of both which do retard the healing of wounds. What may these be?

One should strive to maintain a normal fluid and electrolyte balance, blood volume, and nutrition, including more than a sufficiency of caloric, vitamin, and protein intake.

If infection manifests itself, antibiotics and chemotherapeutic agents are more effective than local applications.

Failures also may be the end results of any mechanical restriction of the vascular supply as by excessive suture tension, constriction by tight bandages, splints or pads, and hemorrhage within the wound by increasing the tension.

Protein

Ravdin, Thompson and Frank[13] found that 72 per cent of the wounds in hypoproteinemia animals either failed to heal or disrupted. Hartzel et al[6] also found in their review of the subject a similar effect from deficiency in protein and Vitamin C content, probably protein deficiency being more important than Vitamin C deficiency.

Lyons and Mayerson[10] showed that in severe illnesses, wound healing is delayed if there is subnormal total serum protein and reduced blood volume. Improvement was noted if liberal amounts of blood by transfusion were administered if the patient had lost 10 per cent of normal body weight from bleeding even if the serum protein level was within the accepted normal range.

Likewise, Vitamin C is important relative to wound healing[9,11] and disruption, especially when the content is below normal, as for example in carcinoma, chronic infection and ulcerative lesions of the gastrointestinal tract. One may suspect a lack of Vitamin C from patient's history when there is (1) an inadequate intake; (2) faulty intestinal absorption; (3) excessive loss from, or sequestration by the tissues.

The loss may be taken care of by administering Vitamin C orally or parenterally; if excessive amounts are given they are eliminated in the urine. Some 0.5 to 4 grams have been advocated by different writers.[11]

Levenson, et all,[8] suggest that persons who have had a severe injury, hemorrhage, or infection show improvement in the healing of wounds from the administation of large doses of Vitamin C and B complex, and for the first few days of stress a patient should have 1 gm. of ascorbic acid, 50 mgms. thiamine, 50 mgms. riboflavin and 500 mgms. nicotine acid daily, and thereafter, small amounts until improvement has manifested itself.

Fluid and electrolytic balance are important factors in the healing process of wounds. Arey[1] has advocated a caloric intake to 4,000 calories in certain cases of hypoproteinemia.

Acidosis favors wound healing, and the reverse is true of alkalosis.

Other factors influencing the process are splinting of wounds, careful suturing to hold the tissues in apposition, complete rest and immobilization in certain cases.

One should not fail to mention another complicating factor in the healing of wounds, that of infection.

It has been pointed out by Owens,[4] it is possible to draw organisms through sixty-four thicknesses of soaked gauze dressings, and that cellophane interposed between

the layers would be successful in preventing their passage to the wound. Probably this may have motivated Lester to interpose mercury cyanide in the dressing. The incidence of infection in clean wounds may vary from 2 to 4 per cent, and may assume a total of 20 per cent.

John Blair,[2] in a very comprehensive review, has made an exhaustive study of postoperative infections in surgically clean wounds, stresses many important sources of contamination: the respiratory tract especially, the nose and throat of the operating team and nurses, and the hands. He concludes that talking, sneezing, and coughing should be kept to a minimum, since these disseminate large quantities of bacteria in droplets of various sizes. The larger droplets tend to drop to the floor or the interposed surface, while the tiny droplets evaporate and form droplet nuclei and are suspended in the air and many may be scattered by air currents. Meleney[12] estimated in 1935 that 35,000 to 60,000 bacteria fall on the operative field in the operating room within one hour.

It is well known that there is no efficient mask as yet devised, but, nevertheless, masks to cover the nose and mouth are desirable. The longer they are worn, the less efficient they become.

Hallman,[2] in 1938, found 50 per cent of all adults with potential pathogenic bacteria in the nostrils. He suggested Penicillin lozenges to combat streptococci and staphylococci in the throat.

According to Price,[2] there are two kinds of bacteria on the skin, transient and resident, the former being easily removed by washing and scrubbing, while the latter are removed with difficulty, requiring approximately 2.5 hours, and are confined to the superficial layers, sweat, and sebaceous glands.

Also, the gloved hand which perspires during operation may multiply the bacteria from a few thousand to over a million in a short period of time, and that gloves are reported to be punctured or torn on an average of 14 to 24 per cent. and that some surgeons are persistent carriers of staphylococci on the hands.

In the air the droplets or droplet nuclei from the respiratory tract are shed in the dust, dirt, or dried discharge from clothing, bedding, or dressings, and the bacteria are directly proportional to the number of the occupants, their duration of occupancy, amount of activity and talking in the operating room. Movements, especially sudden and vigorous, draping, the donning of gloves or shifting of lights, may dislodge and spread the organisms in wards and rooms as well as in the operating room.

Sources of infection in the operating room, as a rule, are of minor importance and are generally due to faulty technique. Visitors should have sterile gowns and masks and the number about the operating table should be limited.

Having discussed some of the complicating factors in the healing of wounds, our interest now concerns another serious and distressing complication with a high mortality and morbidity, wound disruption, dehiscence and eventration in abdominal surgery. Some may divide the complication into incomplete, where the skin or the skin and subcutaneous are intact, which generally results in a ventral hernia, or to complete separation of the abdominal wound known as dehiscence or evisceration. The etiology of the complication may be one or many and may occur after any type of incision.

One may divide the factors contributing to disruption, dehiscence, or eventration into:

1. Local (a) inadequate blood supply
   (b) infection
   (c) interposition of the omentum.
2. General (a) malnutrition
   (b) hypoproteinemia, most important (one series reported 50 per cent or low normal)
   (c) chronic anemia
   (d) massive recurrent hemorrhage, with or without shock
   (e) Vitamin C deficiency
   (f) malignancy
   (g) abnormal fluid and electrolytic balance.

To the operative period belong:

1. defective suture material
2. improperly placed suture
3. careless hemostatis
   (a) vessels only should be ligated and not tissues
4. idiosyncrasy to absorbable suture material
5. insecure closure—tissues may be too thin so the sutures tear out easily

To the postoperative period belong:

1. Disruptive forces that excessively increase abdominal pressure or those that periodically contract the abdominal wall, as violent straining by:
   (a) wretching
   (b) persistent or unrelieved singultous or hiccough
   (c) habitual sneezing
   (d) marked abdominal distention
   (e) coughing
   (f) straining at stool
   (g) sudden movements
2. Failure of healing of the peritoneum and posterior sheath
3. Necrosis of the tissues
4. Sutures rapidly absorbed
5. Knots becoming untied
6. Peritonitis with subphrenic irritation

Incidence

This varies according to the literature from .2 to 2 per cent.[11] Hartzell[5] reported an average of 1.83 per cent. C. W. Mayo[11] has recently reviewed the literature reporting over 1,400 cases of wound disruption. He divides his review of the Mayo Clinic from 1945 to 1949 as follows: on 7,200 cases of colon surgery an incidence of thirty-three cases or .46 per cent; for gastric surgery 5,500 cases with thirty cases or .55 per cent, for 7,600 operations on the biliary tract twenty cases or .26 per cent and no disruption in pelvic operations during the same period. Kohn and Briggs report a review of 7,647 operations with thirty-nine cases, an instance of .51 per cent. Undoubtedly, there are many cases, but like

those to be reported tonight, they have not so far been included in the literature.

Wound separation may occur from the first to the nineteenth day[7] but it generally takes place from the fifth to the tenth, or an average of seven days.[3] The majority of the cases of the Mayo Clinic compare with the above figures.

Dehiscence may occur from infancy to the eighth decade with the majority of the cases occurring in the fifth to six decades. In one series, the ratio was eight males to one female, which may be explained by the many different activities in the male. Those we wish to report were in males only. There is no relation to the seasons of the year.

Mortality and Morbidity

Hartzell and Winfield,[5] in their review, report a mortality of 35 per cent, while the Mayo Clinic report is 18.1 per cent in the period of 1945 to 1949, and in Kohn and Briggs' series, 23 per cent. Our series, although a small number, showed no mortality. The lower mortality probably is due to chemotherapy, antibiotics, studies of the proteins, nasal and intestinal intubation.

The hospital stay is greatly prolonged and is generally three weeks or more, a costly item.

Anesthetics

In the repair of dehiscence, one should have premedication, Baird's solution, that is sodium pentothal and curare, administered by a skillful anesthetist for relaxation, to avoid rough handling and exposure.

Incisions

Longitudinal incisions show the highest incidence of this complication[11] especially in the upper quadrants. Undoubtedly, transverse or oblique incisions are less likely to have this complication. Kohn and Briggs[7] report that in thirty-nine eviscerations, of those with subcostal or transverse incisions 15 per cent eviscerated. There were five cases reported in this series of evisceration in acute appendicitis with McBurney's incision and infection.

Sutures and Drains

There are two schools of thought regarding absorbable and nonabsorbable suture material, each group claiming advantages and disadvantages. Some advocate catgut, while others prefer cotton, silk, and wire. Four of our patients had dehiscence with silk. We believe two important factors may be the use of atraumatic needles to close the peritoneum with accurate closure, and if silk is used, too much tension should not be used to approximate the edge of the wound, especially the fascia, as it may produce too much tension with ischemia of the tissues.

If drains are used, stab wounds are better inasmuch as they do not tend to weaken the wound.

Symptoms and Diagnosis

The patient may complain of a sensation of "something giving away." Sudden appearance of a large amount of serosanguinous drainage should make one suspicious of evisceration.

Intestinal obstruction may occur from the knuckling of the bowel in the area of dehiscence and may be the first symptom if the serosanguinous drainage is overlooked. There may be localized pain in the area of the incision and likewise shock may manifest itself.

Treatment

If the patient's condition warrants, resuture is advisable under Baird's anesthesia with aseptic technique using through and through silkworm or wire retention sutures tied over a gauze roll or rubber tubing. Some advocate resuturing if possible the layers with through and through silkworm gut.

Gastric and intestinal intubation should be instituted before, during, and following the operation to reduce the possibility of obstruction, regurgitation, tracheal aspiration, and pulmonary complications.

Blood or plasma transfusions are necessary in amounts sufficient to combat hypoproteinemia. A high protein diet with a caloric intake to 4,000 calories should be given when it can be tolerated. Likewise, amino acids may be given orally or parenterally.

If an operation cannot be tolerated, conservative measures are in order and under sodium pentothal and curare, the wound may be prepared aseptically, washing the coils of intestine with sterile saline and return them to the peritoneal cavity. Some advocate packing, while others recommend soft rubber drains which extend above and below to the outside of the wound. Dressings and a spica of adhesive is used from the gluteal folds to the axilla, remaining in place a period of two weeks or more.

One should bear in mind the complication of ileus and obstruction.

Case Reports

Case 1.—A white man, age twenty-three, 6 feet 2 inches in height, was admitted to the hospital on July 10, 1945, and operated upon that same day. The preoperative diagnosis was: "Severe Chronic Asthma, and Hay Fever and Acute Appendicitis." The operation was appendectomy for an acute suppurative appendicitis. The incision was a right lower rectus and the closure was by layers with silk for the fascia. During his convalescence he was subjected to severe asthmatic and hay fever attacks with little alleviation from medication or air conditioning. He eviscerated on the eleventh postoperative day. He was resutured with through and through silkworm gut sutures and silk was also used for portions of the rectus fascia. A drain was placed in the lower angle of the wound. His convalescence complicated by his allergy and an infected wound which finally healed and he was discharged on the fifty-sixth postoperative day.

Case 2.—A white man, aged forty-three, 5 feet 11 inches in height and weighing 194 pounds, was admitted to the hospital on December 28, 1945, with a diagnosis of subacute cholecystitis with stones. At operation, through a subcostal incision, a cholecystectomy was done with a stab wound drainage and the wound closed in layers with interrupted silk sutures. The pathological report was chronic cholecystitis with a large stone. On the fifth postoperative day, an acute respiratory developed, and on the seventeenth day he had an

evisceration which was resutured. He was discharged from the hospital on the forty-first day, with a follow-up note two months later that the wound was well healed.

Case 3.—A white man, sixty-four years of age. 5 feet 10 inches in height and weighing 168 pounds, was admitted to the hospital on December 1, 1949, with a diagnosis of chronic cholecystitis with stones. A cholecystectomy, choledochostomy, and appendectomy was done through a high right rectus incision and a T tube was left in the common duct. The closure was by layers with interrupted silk sutures in the fascia and a stab wound for the T tube. Convalescence was complicated by acute emphysema, auricular fibrillation, and persistent hiccough probably due to vagus and phrenic stimulation. He had an incomplete evisceration on the fifth postoperative day which was treated conservatively by a strapping spica. He was discharged the nineteenth day by ambulance to his home.

Case 4.—A white man, fifty-five years of age, 5 feet 11 inches in height and weighing 198 pounds, entered the hospital on June 17, 1948, with a diagnosis of acute appendicitis and was operated upon the same day through a right lower rectus incision and a rupture found and removed. The wound was closed in layers with interrupted silk sutures in the fascia and without drains. On the third postoperative day a partial ileus developed which was relieved by intestinal intubation. An acute and severe emphysema followed. Dehiscence occurred on the thirteenth day and the wound was resutured by through and through heavy silk sutures. He was discharged on the forty-third postoperative day with the wound healed. Two months later the wound was competent.

Case 5.—A white man, aged thirty-nine, 6 feet in height and weighing 178 pounds, was operated upon June 21, 1949, for a right inguinal hernia, and the abdomen explored through a right lower rectus incision. Appendectomy was also done. On the ninth postoperative day a diagnosis of small bowel obstruction, bronchopneumonia and incomplete evisceration was made. Treatment consisted necessarily of strapping. He was discharged on the nineteenth postoperative day and reoperated on February 22, 1950, for a rather large ventral hernia, with fairly good results.

A review of some of the important features associated with the healing of wounds have been presented. A series of five cases of evisceration are reported. The importance of the early recognition of the complication and its high mortality, morbidity, and long hospitalization are emphasized. Pulmonary complications, severe straining of the wound by coughing, sneezing, vomiting, or abdominal distention, hypoproteinemia, lower Vitamin C, have been shown to be etiological factors in dehiscence and eventration. Our series shows an incidence of the complication of 0.5 per cent without mortality in this small series.

Two methods of treatment may be employed, resuturing with through and through sutures, or by layers, or a combination of both which is preferable. If this is not applicable, large adhesive spicas from the groin to the axilla may have to be employed. The mortality rate in evisceration has been markedly reduced, due to chemotherapy and antibiotics, gastric and intestinal intubation, improvement in the anesthetics and their administration, and a more comprehensive understanding of the hypoproteinemia and Vitamin C factors.

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Discussion

DR. H. B. ZIMMERMANN, Saint Paul: Dr. Hanson has competently presented the subject of wound healing, or rather lack of wound healing, and the causes of wound dehiscence. He divided the causes of wound dehiscence into two groups, mechanical and metabolic. I have at home a reprint from the *Saint Paul Medical Journal* of about 1901 or 1902, written by Dr. Edward Boeckmann. This is a very interesting discussion based on anatomical evidence, advocating transverse abdominal incisions to avoid wound disruption. I thought it interesting to bring to your attention the work of a member of this Society of many years ago—a master surgeon who made a real contribution to this subject.

DR. WALTMAN WALTERS, Rochester: I want to say how glad I am to be here again. When I listened to the remarks tonight it brought back memories of eighteen or twenty years ago. I agree with them, and I think one of the nicest things about this Academy is a combination of the quality of the scientific material presented and the friendship of the men who are

members. I have enjoyed listening to Dr. Hanson and I think he has done a good job in the presentation of this material. As I was listening to him I was wondering what constructive comment I could offer on the problem of preventing disruption of wounds. I have never been able to make up my mind as to what the real cause has been in any particular case. In all of the cases reported by Dr. Hanson the patients were seriously sick. All of them, with the exception of the last, had respiratory disturbances, all of them had a serious infection in the viscus operated on. If to infections of the respiratory tract and the coughing which results are added an increase in intra-abdominal pressure due to ileus, disturbances of metabolism from inability to eat or changes in metabolism and cachexia associated with carcinoma, it is clear that not one factor but a combination of factors is responsible. Furthermore, these factors act differently in different individuals.

While in Boston this fall at the meeting of the American College of Surgeons, I saw Dr. Lahey operate. I was interested in his ideas of suture for abdominal wounds. He stressed the fact that closure of an abdominal incision is just as important as the operation and that the surgeon should do it himself. He used fine stainless steel tension sutures and interrupted sutures of silk. He discussed the seriousness of the complications of disruption of a wound; still I think the mortality figures which Dr. Hanson presented, 33 per cent maximum and 25 per cent minimum, seem too high. I think in these days, indeed in the last five years, it is the experience of most surgeons that the risk from secondary closure of wounds is very low. I don't agree with Dr. Zimmermann that transverse incisions are the solution to the prevention of disruption of wounds.

Dr. E. M. Jones, Saint Paul: I am sure that any one who does any abdominal surgery has his share of eviscerations. There has been much discussion about this condition over the years, but no one has produced a satisfactory answer. This discussion recalls to my mind a statement made by Professor Tandler of Vienna. He was discussing the anatomy of procidentia, and, when he referred to the treatment, he pointed out that if there was one good operation to perform for the correction of this condition there would be no need for the many that are offered. I use the transverse incision a great deal, and it seems to me it is an easier wound to close than the longitudinal wound. In thinking back, I am of the opinion that our experience has not been as bad as some of the series reported by Dr. Hanson.

I was glad to hear the paper and enjoyed it very much.

Dr. F. E. B. Foley, Saint Paul: I was very much interested in this presentation of a very interesting subject. During the past three or four years I have had experience which is pertinent to the subject.

In the discussion thus far, there has been no reference to circulation and cardiovascular status as etiologic factors in dehiscence. I have an idea they may be important factors.

During the past two years I have employed ligation of the vena cava in connection with massive electrocoagulation to destroy deeply infiltrating bladder tumors. In my opinion, massive electrocoagulation with its extensive projection of lethal heat into the neoplasm and beyond is the most effective agent we have in dealing with deeply infiltrating bladder tumors. The trouble is the massive electrocoagulation to be effective must extend well beyond the bladder wall. Inevitably it will coagulate blood in pelvic vessels and lead to usually fatal pulmonary embolism in a large percentage of cases. Ligation of the cava makes impossible pulmonary embolism from the site of electrocoagulation. Among seven cases of cava ligation for this purpose, there were three cases of evisceration—none of them fatal.

An immediate temporary effect of cava ligation must be venous engorgement of tissues in which a lower abdominal incision is made as for bladder tumor. Perhaps the same phenomenon has something to do with the higher incidence of dehiscence with longitudinal incisions than with transverse incisions: the general course of the regional vessels is longitudinal; the closing sutures will embrace them if the incision is longitudinal and will go between them if it is transverse.

The chronic passive congestion of an impaired general circulation should have this same effect.

I would like to ask Dr. Hanson if, in his experience, the condition is more frequent in cases of impaired general circulation than in individuals with good hearts.

Dr. James A. Johnson, Minneapolis: There are three types of cases that I watch very carefully. One is the asthmatic. Not infrequently, asthma and the cough become so severe that the wound opens up. The second type of case is the one that has been depleted over a considerable period of time, especially advanced malignancies. The third case is long-standing jaundice. The interesting thing about these cases is that when the wound has been resutured the second time, practically all of them heal. I cannot remember of a single case that has eviscerated a second time in spite of the fact that the second suturing is certainly usually very crude compared to the first. Previously I have used catgut for suturing of wounds. Now I use silk. I do not believe it makes any difference.

Dr. William A. Hanson, closing: In closing, I wish to say that I appreciate being a member of the Academy and having been its president for the past year.

In reference to Doctor Foley's remarks, I believe the condition of the cardiovascular system has a definite bearing on the occurrence of evisceration. This was evident in Case 4, in which there was a marked lowering of the blood pressure during operation.

In Case 5, appendectomy was performed in addition to a right inguinal herniotomy, which emphasizes the old adage that multiple operations done at the same time increase the morbidity and mortality, and this in spite of antibiotic treatment.

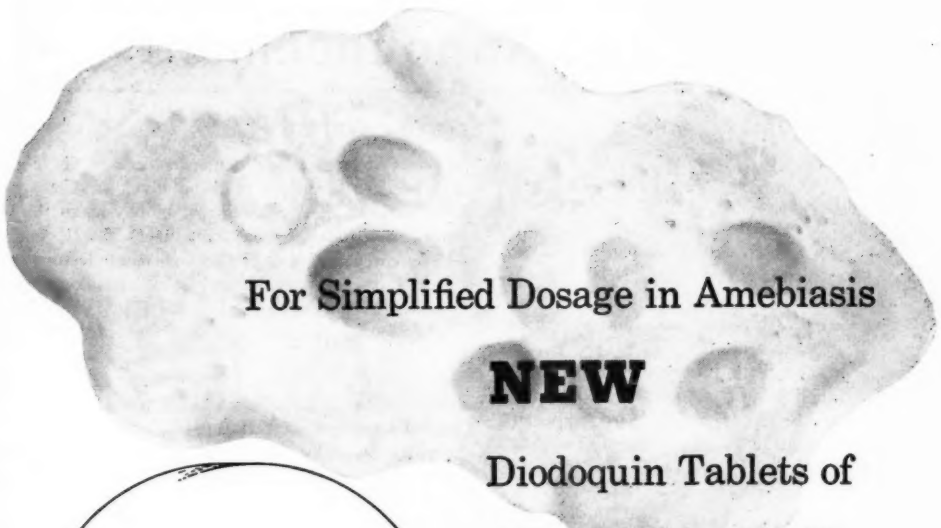
To our secretary, Dr. Wallace Ritchie, for his excellent fulfillment of a task well performed, I wish to present this memento from the Executive Committee and myself, and with it, many thanks. (Dr. Ritchie was presented with a butane cigarette lighter.)

The meeting was adjourned.

Wallace P. Ritchie, M.D.
Secretary

Social Security Commissioner A. J. Altmeyer in a recent communication to Congress, stated that $14,736,000,000 of the reserve fund of the Social Security Administration is now invested in government securities, i.e., loaned to the Treasury for its general operations. In addition, a little less than half a billion ($413 million) was being held on hand in cash for current investment.

Total collections from January 1, 1937, the start of Social Security, to June 30, 1951, were $18 billion, with transfers and interest earned bringing the total income to $20 billion. Benefit payments accounted for $4,874,000,000 and administrative expenses $459,000,000. In other words, the Federal Government gives I.O.U.'s for surplus funds paid in on social security taxes for specific purposes which the government uses for other purposes.



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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

✦ Reports and Announcements ✦

AMERICAN COLLEGE OF CHEST PHYSICIANS

Postgraduate Course.—The annual Postgraduate Course in Diseases of the Chest, sponsored by the Council on Postgraduate Medical Education and the New York State Chapter of the American College of Chest Physicians, will be presented at the Hotel New Yorker, New York City, November 12 to 17. This course will emphasize the recent advancements in the diagnosis and treatment of chest diseases. The course is open to all physicians, but the number of registrants will be limited. Tuition fee is $50; applications will be accepted in the order in which they are received. Applications should be sent to the American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

Interim Session.—The Interim Session of the American College of Chest Physicians will be held at the Ambassador Hotel, Los Angeles, California, on December 2 and 3. On December 2 a scientific session will be presented sponsored by the California Chapter of the College, including round-table luncheon discussions and an x-ray conference. A banquet will be held in the evening. The Board of Regents of the American College of Chest Physicians will meet on December 3, as well as various councils and committees of the College.

Essay Award.—The Board of Regents of the American College of Chest Physicians offers a cash prize award of $250 to be given annually for the best original contribution, preferably by a young investigator, on any phase relating to chest disease. The prize is open to contestants of other countries as well as those residing in the United States. The winning contribution will be selected by a board of impartial judges and the award, together with a certificate of merit, will be made at the forthcoming annual meeting of the College. Second and third prize certificates will also be awarded.

All manuscripts submitted become the property of the American College of Chest Physicians and will be referred to the Editorial Board of the College journal, *Diseases of the Chest,* for consideration. The College reserves the right to invite the winner to present his contribution at the annual meeting. Contestants are advised to study the format of *Diseases of the Chest* as to length, form and arrangement of illustrations, to guide them in the preparation of the manuscript.

The following conditions must be observed: (1) Five copies of the manuscript, typewritten in English, should be submitted to the executive office, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois, not later than April 1, 1952. (2) The only means of identification of the author or authors shall be a motto or other device on the title page, and a sealed envelope bearing the same motto on the outside, enclosing the name of the author or authors.

LECTURE SERIES

A series of lectures and demonstrations in the biophysical aspects of virology will be given in Chicago by Dr. Max A. Lauffer, professor of biophysics at the University of Pittsburgh, on September 20, 21, and 22. These lectures are part of the Gehrmann lecture series sponsored by the Department of Bacteriology of the University of Illinois College of Medicine.

The following program will be presented:

Thursday, September 20

Lecture: Ultracentrifugation. 1:00 p.m., University of Chicago, Abbott Hall, 947 E. 58th St.

Demonstration: The use of centrifugation for preparation and characterization of viruses. 3:00 p.m. Abbott Hall.

Friday, September 21

Lecture: Electrophoresis. 1:00 p.m. North Amphitheatre, Presbyterian Hospital, 1753 W. Congress St.

Demonstration: The use of electrophoresis for purification and characterization of viruses. 3:00 p.m. Presbyterian Hospital.

Saturday, September 22

Lecture: Electron Microscopy. 9:30 a.m. University of Illinois Research and Educational Hospitals, 1835 W. Polk St.

Demonstration: The use of electron microscopy in the study of viruses. 11:00 a.m., Room 342, University of Illinois Dental-Medical-Pharmacy Building, 1853 W. Polk St.

All interested are invited to attend the lectures. Because of space restrictions, however, the demonstrations must be limited to twenty. All who wish to attend the lectures may register by writing to Dr. J. E. Kempf, Department of Bacteriology, University of Illinois, 808 S. Wood St., Chicago 12, Illinois, before September 15.

MINNESOTA PUBLIC HEALTH CONFERENCE

Minnesota physicians, health officers, and other interested community persons will get together September 28 and 29 at the fifth annual meeting of the Minnesota Public Health Conference in Hotel Nicollet, Minneapolis.

Featured on the program of special interest to physicians will be a discussion Friday morning, September 28, of milk problems in Minnesota. A milk sanitarian from the U. S. Public Health Service will speak on "Guideposts for Milk Ordinances." Myron W. Clark, Commissioner of Agriculture, Department of Agriculture, Dairy and Food, will talk on the "Economic Value of High Quality Milk." Brucellosis will be discussed by Dr. Wesley Spink, University of Minnesota; J. S. Jones,

(Continued on Page 904)

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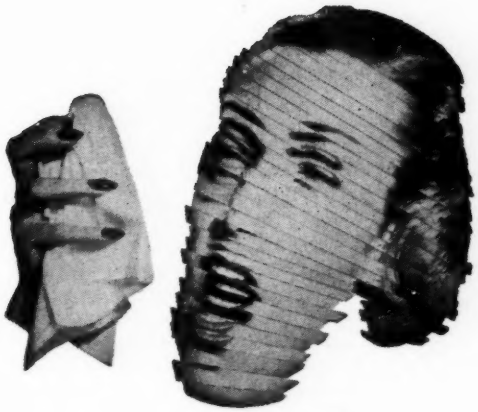

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MINNESOTA PUBLIC HEALTH CONFERENCE

(Continued from Page 902)

State Farm Bureau, and Dr. Ralph West, representing the State Livestock Sanitary Board.

A special feature of the Friday luncheon meeting is a report on rabies in Minnesota, to be given by Dr. D. S. Fleming of the Minnesota Department of Health. The afternoon session of the physicians' and health officers' meeting will be held with environmental sanitation personnel from state and local health agencies throughout Minnesota. A discussion on municipal, rural and private water systems will be held to kick off the afternoon program. A discussion on fluoridization of water will also be a part of the opening discussion. Dr. Jan Tillisch of Rochester will discuss the medical problem of civil defense in the second session of the afternoon, while George Michaelson of the Minnesota Department of Health will discuss sanitation problems of civil defense. Problems of insect and rodent control will wind up the afternoon with a talk by Albert Buzicky, assistant state entomologist, and Dr. E. A. Kilbride of Worthington.

The annual banquet session of the conference will be held Friday evening with the principal address by Herman E. Hilleboe, native Minnesotan who is now Commissioner of Health in New York State.

Saturday morning a business session of the conference will be held, followed by a summary of the special interest group meetings held Friday. All physicians are urged to attend the conference, which brings together people interested in board problems of public health in Minnesota.

The conference also features a number of exhibits by state agencies interested in public health which present problems of vital interest to physicians in the state.

AMERICAN DERMATOLOGICAL ASSOCIATION

The American Dermatological Association is again offering a prize of $300 for the best essay submitted for original work, not previously published, relative to some fundamental aspect of dermatology or syphilology. The purpose of this contest is to stimulate younger investigators to original work in these fields.

Manuscripts typed in English with double spacing and ample margins as for publication together with illustrations, charts, and tables, all of which must be in *triplicate*, are to be submitted not later than December 1, 1951. The manuscripts should be sent to Dr. Louis A. Brunsting, Secretary, American Dermatological Association, 102-110 Second Avenue, Southwest, Rochester, Minnesota; those which are incomplete in any of the above respects will not be considered. Competition in this prize contest is open to scientists generally, not necessarily to physicians.

CONTINUATION COURSES

Bacteriology for Medical Technologists.—The University of Minnesota announces a continuation course in bacteriology for medical technologists on October 15 and 16. The course will be presented at the Center for Continuation Study and will be devoted to problems of the hospital bacteriological laboratory. Considerable emphasis will be placed on laboratory methodology, classification and identification of disease-producing agents, and some emphasis on clinical correlation and application.

The visiting faculty member for the course will be Dr. Morris Gordon, senior assistant scientist of the Mycology Laboratory, Communicable Disease Center, U. S. Public Health Service, Chamblee, Georgia. The remainder of the faculty for the course will be made up of members of the staff of the University of Minnesota.

This course is being sponsored by the Minnesota Society of Medical Technologists and given with the financial support of the American Society of Medical Technologists.

Symposium on Rheumatic Fever.—The University of Minnesota announces a symposium on rheumatic fever to be presented November 29, 30, and December 1. The symposium is being given with the sponsorship and financial support of the Minnesota Heart Association. Distinguished medical scientists who have accepted an invitation to participate include: Dr. T. Dunckett Jones, New York City; Dr. Ann Kuttner, New York City; Dr. Maclyn McCarty, New York City; Dr. George Murphy, New York City; Dr. Francis Schwentker, Baltimore, Maryland; Dr. Chandler A. Stetsen, Cheyenne, Wyoming; Dr. Charles Remmelkamp, Cleveland, Ohio; and Dr. Lowell Rantz, San Francisco, California. Members of the faculty of the University of Minnesota Medical School and the Mayo Foundation will also participate. All interested physicians, teachers, and investigators are cordially invited to attend. There will be no tuition nor registration fees.

Fracture and Traumatic Surgery.—The University of Minnesota will present a continuation course in fractures and traumatic surgery for general physicians and surgeons on November 8 through 10, 1951. The course will be conducted at the Center for Continuation Study and will emphasize the more frequent and practical problems encountered in practice. The speakers will consist of members of the faculty of the University of Minnesota and the Mayo Clinic.

KANDIYOHI-SWIFT-MEEKER SOCIETY

The Kandiyohi-Swift-Meeker County Medical Society Press Conference was held at 7:30 p.m. on July 13 in the Blue Wave Room of the Lakeland Hotel in Willmar. After a half-hour get-together, dinner was served to a total of fifty-three, including twenty-nine doctors of medicine, twenty-three of them Society members.

Following the dinner, all guests introduced themselves. Dr. R. K. Proeschel gave a few introductory remarks and introduced Mr. Manley Brist of Saint Paul, legal representative of the Minnesota Association, who gave a brief talk and asked for a general round-table discussion following the forthcoming talk by State Senator Faye Childs of Maynard.

Senator Childs gave a talk on "The Present-Day Dangers" in this country. Following his talk, on motion by Dr. Penhall, a standing vote of thanks was given Senator Childs for his enlightening presentation.

The following problems and questions were brought up and discussed at the Round-Table Discussion:

(Continued on Page 906)

for a sound mind and healthy body

plenty of citrus fruit

Diets restricted because of allergies, diabetes, ulcers, etc. are frequently low in vitamin C[1,3,5]—thus adding a nutritive deficiency to the existing condition.[8] In gastric and duodenal ulcers,[2] a subscorbutic state is particularly serious because it interferes with collagen formation and capillary integrity.[3] Florida orange juice alone—or with milk to prevent a possible "burning" sensation—is not only a palatable source of vitamin C, but a quick means for providing an energizing "lift"[5,7] produced by the easily assimilable fruit sugars.[6] Fortunately Florida orange juice is virtually non-allergenic.[4]

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REFERENCES:

1. Bicknell, F. and Prescott, F.: The Vitamins in Medicine, 2nd ed., Heinemann, 1946.
2. Dunnigan, W. M. et al: Ohio J. Sc. 44:123, 1944.
3. Ivy, A. C. et al: Peptic Ulcer, Blakiston, 1950.
4. Jeans, P. C. and Marriott, W. McK.: Infant Nutrition, Mosby, 1947.
5. Jolliffe, N. et al, ed.: Clinical Nutrition, F. B. Hoeber, 1950.
6. McLester, J. S.: Nutrition and Diet in Health & Disease, 4th ed., Saunders, 1944.
7. Sherman, H. C.: Chemistry of Food and Nutrition, 7th ed., Macmillan, 1946.
8. Spies, T. D.: J.A.M.A. 122:407, 1943.

Head Pain as a Diagnostic Lead

Frequently the presence of head pain is overlooked. The physician learns of it only if he has made an effort to elicit the information. Since the etiology of the pain is the basis of rational management, the patient should be warned against taking medication before diagnosis is made.

Friedman[1] deplores the tendency to call any chronic recurring headache migraine. Careful history-taking and full physical and neurological examinations are essential for accurate diagnosis. A good starting point is a description of the headache — its character, laterality, frequency and intensity.[2]

The following chart gives briefly the primary diagnostic leads and treatment for the most common types of headache.

Etiology of Headache	Primary Diagnostic Data	Primary Therapy
Inflammatory e.g., Meningitis Abscess	Inflammation of intracranial structures; fever; leucocytosis; bacteriologic diag.	Specific: sulfonamides and antibiotics. Symptomatic: analgesics.
Tumor	Pain varies as spinal press. changes; skull X-ray.	Specific: surgery. Symptomatic, analgesics &/or hypnotics.
Sinusitis	Sinus congestion and infection; cloudy X-ray.	Specific: antibiotics and drainage. Symptomatic: analgesics.
Hypertensive	Hypertension present but pain not related to b.p. level; Dihydroergotamine. relieves pain.	General hypertension therapy; sedation. Symptomatic: analgesics.
Migraine & other vascular headaches	Headache: recurrent, intense, throbbing. No organic causation; migraine in family; patient: energetic, perfectionist. Visual prodromata; g-i. upset during headache.	To abort attack: oral ergotamine plus caffeine. General: adjustment to minimize nervous stress.

Data here tabulated is from: Wolf, G., Jr.,[3] and Friedman, A. P.[4]

Cecil[5] ranks vascular headaches, e.g., migraine and tension headaches, as the most commonly encountered of all. Because of their functional nature and usual recurrence at frequent intervals, they present a long-term therapeutic problem.

Therapy is conducted along two lines:

1) Psychotherapy to reduce the frequency of attacks. This consists mainly of advice on emotional adjustment to stressful situations and guidance toward a good balance between work and relaxation.

2) Treatment of the distressing attack to prevent the usual period of incapacitation. Many investigators have reported that ergotamine preparations are effective for relief of the acute migraine attack in 80% of cases.[1,6] The drug is given immediately when an attack is approaching and dosage adjusted to the needs of the individual.

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KANDIYOHI-SWIFT-MEEKER SOCIETY

(Continued from Page 904)

1. Won't a compulsory insurance program do more for the people than the relatively high cost voluntary insurance?

2. The problem of the chronically ill in the middle income group.

3. Is the medical profession getting the most favorable presentation by the AMA advertising program?

4. The law of privilege—Mr. Brist brought out that in general there are only two privileges: (a) what the patient is/was suffering from, and (b) the treatment prescribed. The cause of death is not privileged.

Following a vote of thanks to the committee of Drs. Roger Michels, Lennox Danielson, R. P. Griffin and assistants, the meeting adjourned.

MINNESOTA SURGICAL SOCIETY

At a recent meeting of the Minnesota Surgical Society, held in Duluth, the following officers were elected: Dr. Albert Fritsche, New Ulm, president; Dr. Lyle J. Hay, Minneapolis, vice president; Dr. Owen G. McDonald, Duluth, secretary-treasurer.

AMERICAN MEDICAL ASSOCIATION

(Continued from Page 895)

secretary, Dr. E. S. Hamilton from the Board of Trustees, the Speaker and Vice Speaker, all ex officio.

The following were elected as Affiliate Fellows: Drs. David P. Duffie, Juliaca, Peru, S. A.; Dunbar Wallace Smith, Los Angeles; William H. Daughaday, St. Louis; Howard Stanley Hoyman, Urbana, Ill.

The House elected 490 physicians to Associate Fellowships.

Dr. Louis H. Bauer, newly elected President-Elect, addressed the House, expressing his appreciation of the honor, saying, "I feel very humble when I recall those who have preceded me in this office. A year from now, when I take up the torch . . . I hope I can keep it flaming as brightly as have my predecessors."

The House heard the report on American Medical Education Fund given by Dr. Elmer L. Henderson, president of the Foundation. Dr. F. F. Borzell presented, on behalf of the House, a purse, to Miss Hattie Niehoff, chief clerk, who, after having served for twenty-seven years, was retiring.

After giving a rising vote of thanks to Atlantic City, Dr. David Allman and Mr. Harold Baggs, the House adjourned at 3:05 p.m.

GEORGE A. EARL, Saint Paul
W. W. WILL, Bertha
F. J. ELIAS, Duluth
J. ARNOLD BARGEN, Rochester
Delegates to the American Medical Association

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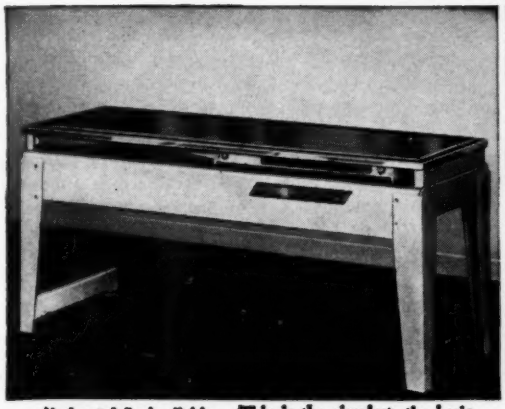
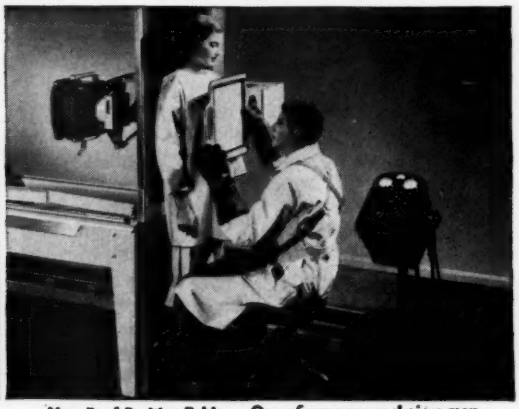
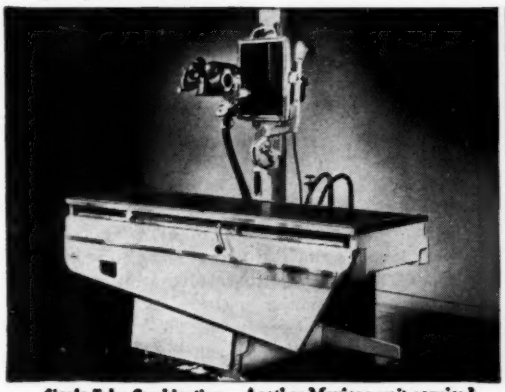


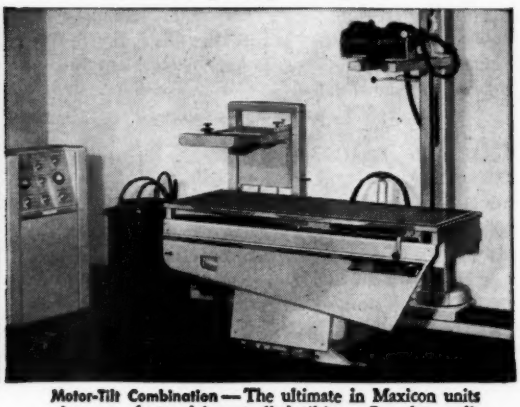
Horizontal Bucky Table—This is the simplest, the basic Maxicon unit. Practical for use in straight radiography, it can later be upgraded to provide one of many units to expand your facilities.



New Dual-Position Table—One of your many choices may be this unit for radiography and fluoroscopy with either a 25 or 100 ma generator. Its "tip-up" top permits vertical as well as horizontal patient positioning.



Single-Tube Combination—Another Maxicon unit acquired by augmenting the basic table. The table-mounted tube stand is a part of the table—angulates with it—is the only one that permits straight-line tube positioning. Instantly converted from radiography to fluoroscopy.



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Woman's Auxiliary

FALL CONFERENCE SLATED OCTOBER 12

Plans for the annual Fall Conference, to be held at the Hotel Lowry, St. Paul, on October 12, are nearly complete. Highlights of the all-day meeting include a School of Instruction, which will bring valuable information to members on all phases of auxiliary work, reports from various sections of the state on progress of auxiliary projects, and legislative information. The session will begin at 9:30 a.m. with the regular Board meeting.

Featured speaker at the one o'clock luncheon will be Mrs. Mason Lawson, third vice president of the Woman's Auxiliary to the American Medical Association, who will represent the national organization and present Minnesota members with news and program information on the national auxiliary scene.

Auxiliary members interested in attending this important meeting should make hotel and luncheon reservations as soon as possible with the office of the Minnesota State Medical Association, 496 Lowry Medical Arts Building, St. Paul.

AUXILIARY TRACES HISTORY FROM 1922

Mrs. E. M. Hammes, Sr.

Realizing that many auxiliary members are not familiar with the facts of the organizational history of their group, the national auxiliary requested that each state submit a brief history of the development of its auxiliary. Mrs. E. M. Hammes, 1950-1951 historian, prepared the history of the Minnesota group. This will be presented in three installments, beginning with this issue.

In the year 1922 the Minnesota State Medical Association felt the need for a woman's auxiliary to help them at conventions and to assist in extending the aims of the medical profession to other organizations. Their secretary, Dr. Carl Drake, asked Mrs. Archibald McLaren of St. Paul, to call together a meeting of doctors' wives with the purpose of organizing an auxiliary.

This meeting took place October 13, 1922, in Millard Hall, University of Minnesota.

Mrs. William Byrnes of Minneapolis made a motion that we form an auxiliary to the State Medical Association. Motion carried, and the following officers were elected:

President.....Mrs. H. B. Sweetser, Minneapolis
First Vice-President.....Mrs. H. P. Ritchie, St. Paul
Second Vice-President....Mrs. C. E. Bergquist, Duluth
Third Vice-President....Mrs. F. C. Rodda, Minneapolis
Recording Secretary....Mrs. Rood Taylor, Minneapolis
Corresponding Secretary.....Mrs. Carl Drake, St. Paul
Treasurer.....Mrs. Ernest Wanous, Minneapolis
Constitution and By-Laws.....
Mrs. William Byrnes, Minneapolis

The new State Auxiliary comprised the auxiliaries of (1) Hennepin County, which had been organized in 1910 by Mrs. Byrnes; (2) St. Louis County, organized in 1912; and (3) Ramsey County, organized in 1914.

The first county auxiliary from outside the three large cities to join was Washington, organized in June, 1923, with a paid membership of 10. Stearns-Benton Auxiliary was added in 1924.

The State Auxiliary continued to grow slowly and steadily until 1931, when it received an impetus, and took in 10 county auxiliaries in one year.

When the fourth largest city in Minnesota, Rochester, of Olmsted County joined the State Auxiliary, we gained an additional increase in membership of approximately 300.

The State Medical Auxiliary, begun in 1922, had 99 charter members. Now, in 1951, it has grown to a membership of 2,106, including members-at-large in the three remaining unorganized counties. It has 29 county auxiliaries out of a possible 32.

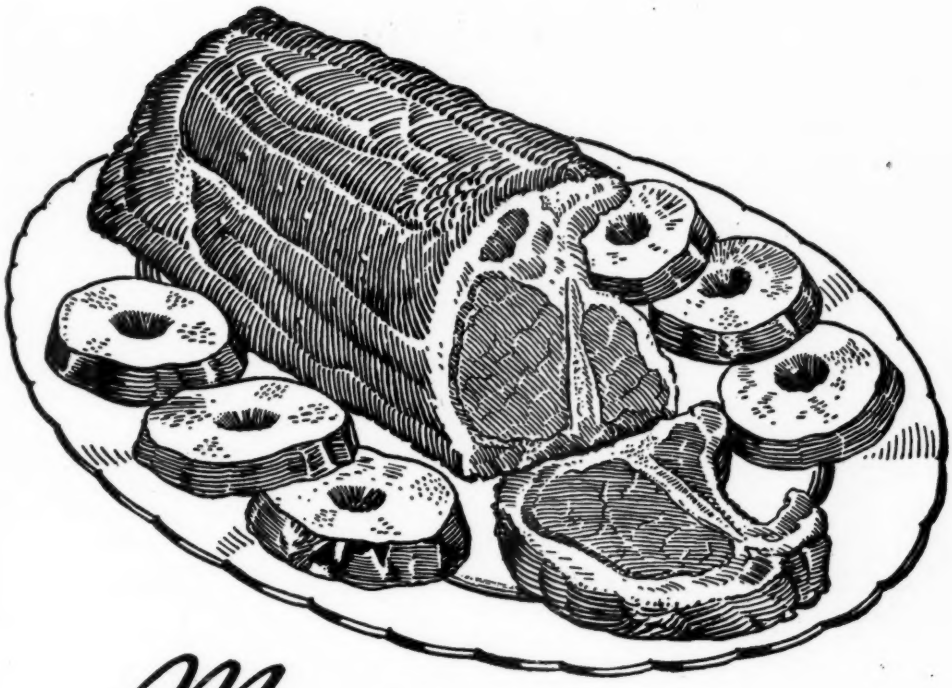
Before continuing, I think it would be fitting to pay a tribute to these first officers of the new auxiliary. Theirs was not the part of serving in a smoothly running organization. They had to work everything out the hard way, and how well they built is proven by our steady growth in membership, and our increasing usefulness to the State Medical Association.

I want to single out just two of these splendid women. First, Mrs. Byrnes of Minneapolis, as it was she who made the original motion to form the State Auxiliary. She was also appointed by the first president, Mrs. Sweetser, to draw up the Constitution and By-Laws. She served as state Parliamentarian many years and was Parliamentarian to the National Auxiliary during the term of office when Mrs. Blake was president in 1933.

Mrs. Byrnes founded Hennepin Auxiliary in 1910. In 1936, in Rochester, she was made Honorary President of the State Auxiliary. She was truly the grand old lady of our organization and we admire her not only for her great ability, but also for her kind and helpful personality.

The other early officer I want to mention is Mrs. H. P. Ritchie of St. Paul, second president of the Auxiliary, who was one of the best loved women in the society, always ready to help, gracious, and possessing a wonderful sense of humor. She eased the new auxiliary over our early mistakes, and did a great deal to promote friendship among the doctors' wives.

TB deaths among people over forty-five have been cut very little in recent years, and in some of the older age groups, deaths from the disease have actually increased.—Christmas Seal Health News Release.



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*McLester, J. S.: Protein Comes Into Its Own, J.A.M.A. *139*:897 (Apr. 2,) 1949

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In Memoriam

CARL F. AUSMAN

Dr. Carl F. Ausman of Saint Paul died following a stroke on May 23, 1951 at the age of sixty-seven.

He was born at Brandon, Wisconsin, June 9, 1883. After studying two years at Northwestern University, he obtained his M.D. degree at Northwestern University medical school in 1912. He interned at Mercy Hospital in Davenport, Iowa, and later took postgraduate work at Vienna and Budapest. He practiced six months at St. Martin, Minnesota, eight months at Barrett, Minnesota, two years at Deer Creek, Minnesota, two years at Bellingham, Minnesota, eleven years at Paynesville, Minnesota, and a year at Seattle before moving to Saint Paul.

Dr. Ausman was a member of the Ramsey County Medical Society, the Minnesota State Medical Association and the American Medical Association. He was also a member of the Masonic Blue Lodge of Paynesville and the Scottish Rite, Minneapolis.

Dr. Ausman is survived by his wife, Myrtle, and a son, Dr. Duane Ausman of Saint Paul. Two brothers and two sisters also survive him.

VERNE G. BURDEN

Dr. Verne G. Burden, former fellow in surgery of the Mayo Foundation, died on June 23, 1951, in Philadelphia, Pennsylvania.

Verne Burden was born January 17, 1895, at St. Mary's Pennsylvania. He received the degree of M.D. in 1919 from the University of Pennsylvania. He was an intern at the University of Pennsylvania Hospital from September, 1919, to October, 1921. He entered the Mayo Foundation as a fellow in surgery in October, 1921; he received the degree of M.S. in surgery in 1925 from the University of Minnesota and left the Mayo Foundation in July, 1925. For three years he was attending surgeon at the Philadelphia General Hospital after which he was attending surgeon at St. Joseph's Hospital in Philadelphia and consulting surgeon at the Andrew Kaul Memorial Hospital, St. Mary's. From April, 1940, until he entered active military service he was medical director of the Eastern State Penitentiary Hospital in Philadelphia.

Dr. Burden was a fellow of the American College of Surgeons and of the American Medical Association; and a member of the College of Physicians of Philadelphia.

HENRY C. DOMS

Dr. Henry C. Doms of Slayton, Minnesota, died July 17, 1951, of a heart affliction from which he had suffered the past two years.

Henry Doms was born at Woodstock, Minnesota, March 29, 1880. He was educated in the Pipestone county schools and high school. He obtained his M.D. degree from the Kansas City Medical College in 1905 and immediately took up practice at Holland.

On July 12, 1905, Dr. Doms and Anna Thiel of Pipestone were united in marriage. A son, Charles T., and a daughter, Elizabeth (Mrs. Lester Cox of Redwood Falls), were born to the union.

Dr. Doms established and, in partnership with Dr. Leon A. Williams, operated the Home Hospital of Slayton. In the early 1940's, he became a member of the International College of Surgeons.

During Dr. Doms' life, he was president of the Slayton Civic and Commerce Association, president of the Southwestern Minnesota County Medical Society and a Past Master of the AF and AM 199. He had also been president of the Murray County Public Health Association since 1929. He was a member of the Southwestern Minnesota County Medical Society, the Minnesota State Medical Association and the American Medical Association. Slayton loses one of its outstanding citizens in Dr. Doms.

ARTHUR W. ECKSTEIN

Dr. Arthur W. Eckstein of Grand Meadow, Minnesota, formerly a resident of North Mankato, died July 19, 1951, at the age of sixty-three.

Arthur Eckstein was born December 8, 1888, in New Ulm, Minnesota. He is survived by his wife, Opal, and a daughter, Mrs. Edward Cary of North Mankato.

GUY U. Y. FREDERICKSON

Dr. Guy Frederickson of Willmar was killed instantly in an automobile accident on July 4, 1951.

Guy Frederickson was born at Emmetsburg, Iowa, September 6, 1893. He attended Hutchinson Theological Seminary and Union College at Lincoln, Nebraska, where he obtained the degree of B.S. His medical degree was obtained from the College of Medical Evangelists at Los Angeles in 1924. He interned at Washington Sanitarium and Hospital at Tacoma Park, Washington.

Dr. Frederickson practiced at Lake Lillian, Minnesota, from 1926 to 1935. He was in medical practice with his wife, Alice, also a physician.

Dr. Frederickson was a member of the Kandiyohi County Medical Society, the Minnesota State Medical Association and the American Medical Association.

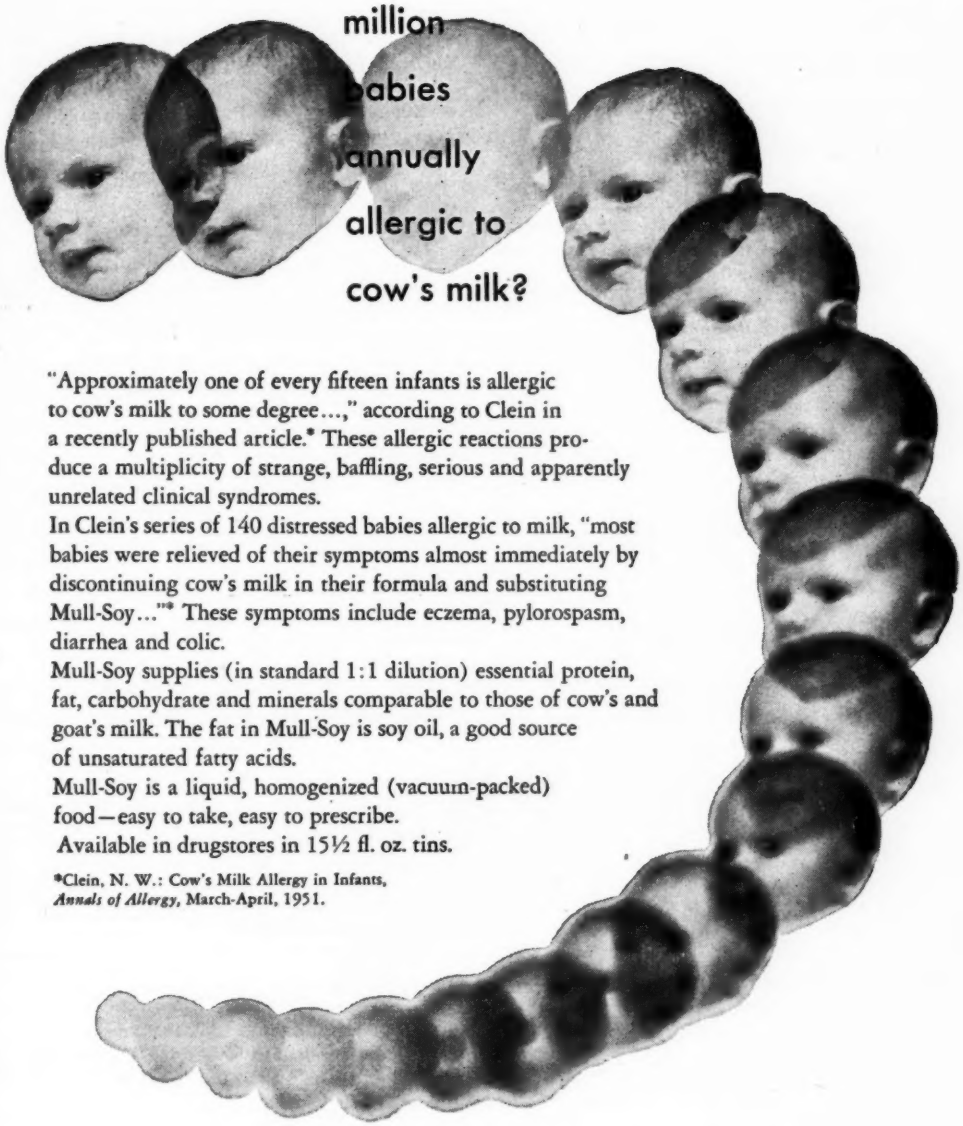
JOHN M. FALLON

Dr. John M. Fallon, former fellow in surgery of the Mayo Foundation, died on June 21, 1951, at his home in Shrewsbury, Massachusetts, of coronary insufficiency.

John Fallon was born September 17, 1901, at Worcester, Massachusetts. He received the degree of M.D. in 1923 from Harvard Medical School; was assistant in anatomy at Harvard Medical School from 1923 to 1925; was an intern at St. Vincent Hospital, Worcester, for seven months in 1924; was surgical intern at Peter Bent

(Continued on Page 912)

almost a quarter million babies annually allergic to cow's milk?



"Approximately one of every fifteen infants is allergic to cow's milk to some degree...," according to Clein in a recently published article.* These allergic reactions produce a multiplicity of strange, baffling, serious and apparently unrelated clinical syndromes.

In Clein's series of 140 distressed babies allergic to milk, "most babies were relieved of their symptoms almost immediately by discontinuing cow's milk in their formula and substituting Mull-Soy..."* These symptoms include eczema, pylorospasm, diarrhea and colic.

Mull-Soy supplies (in standard 1:1 dilution) essential protein, fat, carbohydrate and minerals comparable to those of cow's and goat's milk. The fat in Mull-Soy is soy oil, a good source of unsaturated fatty acids.

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*Clein, N. W.: Cow's Milk Allergy in Infants, *Annals of Allergy*, March-April, 1951.

Mull-Soy first in

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The **Borden** Company, Prescription Products Division, 350 Madison Avenue, New York 17

JOHN M. FALLON

(Continued from Page 910)

Brigham Hospital, Boston, from February, 1925, to July, 1926, and surgical resident at St. Vincent Hospital from July to December, 1926. He entered the Mayo Foundation as a fellow in surgery on January 1, 1927; was appointed first assistant in surgery on January 1, 1929, and left the Mayo Foundation on April 1, 1929, after which he practiced surgery at the Fallon Clinic in Worcester.

Dr. Fallon was a fellow of the American College of Surgeons, and of the American Medical Association, a member of numerous other medical and scientific organizations and a member of a number of cultural societies.

Dr. Fallon was president for 1950-1951 of the Alumni Association of the Mayo Foundation.

OLIE E. HAGEN

Dr. Olie E. Hagen, a practitioner at Butterfield, Minnesota, since 1903, passed away July 16, 1951. He was seventy-nine years of age.

Olie Hagen was born in Hassolgn, Norway, December 6, 1871. He received his preliminary education at Oslo and came to America at the age of nineteen and lived at Vermilion, South Dakota.

He obtained his medical degree from the College of Physicians and Surgeons at Chicago in 1903. In 1904, he married Nina Hillestad whom he had met at the University of Chicago and who survives him.

In 1907, Dr. Hagen took postgraduate work at the Illinois School of Electrotherapeutics and X-Ray and in 1912 at the Chicago Polyclinic.

He was a member of the Watonwan County Medical Society, the Minnesota State Medical Association and the American Medical Association.

On November 16, 1947, Dr. Hagen was honored by the community in which he lived with a special "Dr. Hagen Day" at the local high school auditorium which was filled to overflowing for the occasion, a testimony of the high esteem in which he was held.

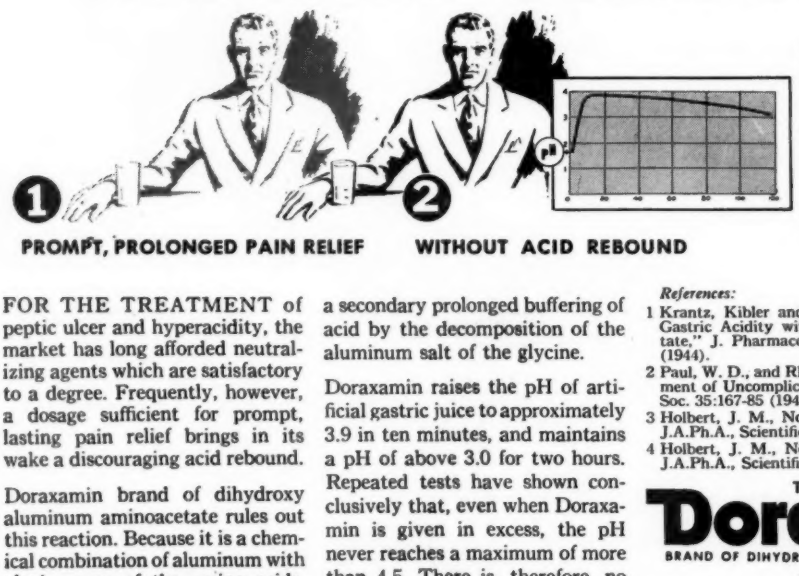
RUTH (VORIES) HECK

Dr. Ruth (Vories) Heck, former fellow in pediatrics of the Mayo Foundation, died in Rochester, Minnesota, on June 18, 1951.

Mrs. Heck was born July 6, 1893, at Pueblo, Colorado. She received the degree of B.S. in 1915 from Simmons College and she attended the University of Colorado from 1921 to 1923. She received the degree of M.D. in 1926 from the University of Minnesota and interned at the Cincinnati General Hospital at Cincinnati, Ohio, from July, 1925, to July, 1926. She entered the Mayo Foundation as a fellow in pediatrics in October, 1926, and left the Mayo Foundation in April, 1928. She was married to Dr. Frank J. Heck on May 26, 1928.

for the **ULCER PATIENT...**

DOUBLE COMFORT



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FOR THE TREATMENT of peptic ulcer and hyperacidity, the market has long afforded neutralizing agents which are satisfactory to a degree. Frequently, however, a dosage sufficient for prompt, lasting pain relief brings in its wake a discouraging acid rebound.

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References:

1 Krantz, Kibler and Bell: "The Neutralization of Gastric Acidity with Basic Aluminum Aminoacetate," J. Pharmacol. and Exper. Therap., 82:247 (1944).
2 Paul, W. D., and Rhomberg, C.: "Medical Management of Uncomplicated Peptic Ulcer," J. Iowa M. Soc. 35:167-85 (1945).
3 Holbert, J. M., Noble, Nancy, and Grote, I. W.: J.A.Ph.A., Scientific Edition, 36:149 (1947).
4 Holbert, J. M., Noble, Nancy, and Grote, I.W.: J.A.Ph.A., Scientific Edition, 37:292-294 (1948).

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CARL J. LIND

A pioneer Minneapolis physician with a distinguished record of over fifty-five years of active practice in the city until the day of his death, July 21, 1951, Dr. Carl J. Lind, Sr., attended as many as three generations of patients in a family. He was born December 6, 1871, and came to Minnesota as a youth from Ljunga, Smaland, Sweden.

He early studied pharmacy and became a registered pharmacist, maintaining his interest throughout his life as a member of the Minneapolis Veterans Druggists Association and the American Pharmaceutical Association.

Awarded the Doctor of Medicine degree from Hamline University, magna cum laude, in 1897, he held the rank of professor of Materia Medica and Therapeutics at Hamline from 1898-1905. A staff member of the Minneapolis General Hospital and the Swedish Hospital, he served as Chief of Staff at the Swedish Hospital for a number of years.

In 1947 he was honored by an award from the Minnesota State Medical Association for fifty years of honorable service to his profession.

For thirty-five years his offices were at Cedar and Riverside, about the South Side State Bank Building; for the past twenty years, in the Lind Building, 2630 East Twenty-fifth Street.

Dr. Lind was one of the founders of the Minnehaha State Bank and built and owned the original building on 27th Avenue, and 25th Street in 1910. He was elected to the Board of Directors in 1913 and served continuously from 1913 to 1951 as a member of the Board of Directors of the bank which in 1945 became the First Minnehaha National Bank located at Lake Street and 27th Avenue.

His immediate survivors include a son and daughter-in-law, Colonel and Mrs. Carl John Lind, Jr., U. S. Medical Corps, and Michael Lind, aged five, a grandson, all of Fort Sam Houston, Texas; and a daughter, Melva Lind, Dean of Miami University, Oxford, Ohio.

Dr. Lind was a member of the Hennepin County Medical Society, the Minnesota State Medical Association, and the American Medical Association. He was also a member of Joppa Lodge, No. 300, AF and AM of Minnesota.

JOHN W. OLSON

Dr. John W. Olson, for the past fourteen years a practitioner in Minneapolis, died August 1, 1951, at the age of seventy-six.

Dr. Olson was born in Sweden, August 10, 1874. He obtained his medical degree from the University of Minnesota in 1900 and interned at the City and County Hospital in Saint Paul. He practiced for five years at Cokato, Minnesota, before moving to Minneapolis

Dr. Olson is survived by his wife, Huldah; a

daughter, Ruth; a brother, Dr. O. A. Olson of Minneapolis, and two sisters, Mrs. Louis Sundeen of Kerkhoven, Minnesota, and Mrs. Carrie Dahlgren of Winnipeg.

C. R. SANBORN

Dr. C. R. Sanborn, a former Minneapolis physician, died at his home in Carmel, California, August 10, 1951, at the age of sixty-eight.

Dr. Sanborn was born in Faribault, October 15, 1883. He obtained his M.D. degree from the University of Minnesota in 1907 and practiced in Parkers Prairie and Bemidji before locating in Minneapolis. He moved to Carmel fifteen years ago and practiced in Oakland until his retirement in 1945.

He was a member of Zeta Psi academic fraternity and Nu Sigma Nu medical fraternity. He was also a member of the Minnesota "M" club.

He is survived by his wife, Annetta, and two brothers, G. W. Sanborn of Staples and R. E. Sanborn of Bemidji.

FREDERICK H. SCOTT

Dr. Frederick H. Scott, a teacher of physiology at the University of Minnesota Medical School from 1908 until his retirement in 1944, died of a heart ailment July 21, 1951, at his summer home at Gull Lake, Minnesota.

Frederick Scott was born in Toronto, August 19, 1876. He studied for his doctor of medicine and doctor of physiology degrees at the University of Toronto and the University of London.

He joined the faculty of the University of Minnesota medical school in 1908 as assistant professor of physiology, taking over much of the lecturing formerly done by Dr. Richard Olding Beard. In 1919, he became a professor of physiology.

Dr. Scott is survived by his wife, Eleanor; a son, Frederick O. Scott of Washington, D. C., and one granddaughter.

Dr. Scott had won the admiration and affection of the hundreds of graduates of the University of Minnesota Medical Schools of recent years.

GILBERT SEASHORE

Dr. Gilbert Seashore, coroner of Minneapolis for thirty-four years before his retirement December 31, 1942, died August 1, 1951. He was seventy-seven years of age.

Dr. Seashore was born at Dayton, Iowa, July 14, 1874. He attended Gustavus Adolphus College at St. Peter, Minnesota, where he graduated with a B.A. degree in 1896. He studied medicine for two years at the University of Iowa and two years at the University of Minnesota where he obtained the degree of M.D. in 1902. His internship was served at Swedish Hospital, Minneapolis. In 1907, he took postgraduate work in Vienna.

In 1908, a group of friends urged him to file for county

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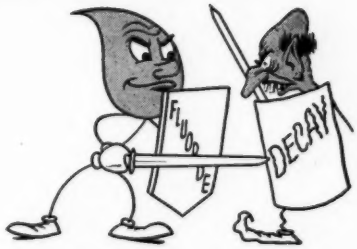
coroner. During his thirty-four years as coroner he, personally or through deputies, investigated more than 24,000 murders, suicides or fatal accidents of all kinds.

Dr. Seashore is credited with having established numerous reforms in office such as a system for protecting property of the dead and recording deaths which have been copied elsewhere.

Surviving Dr. Seashore are his wife, the former Signa Blomquist, whom he married in 1917, and two daughters, Ruth and Mrs. Marian Seashore Segerstrom, both of Minneapolis.

Important News!



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Communication

BUTTER VS. OLEOMARGARINE

To the Editor:

As chairman of the Minnesota State Medical Association's Committee on Public Health Education, I am concerned about an editorial that appeared in the last issue of MINNESOTA MEDICINE. I cannot believe that this editorial—entitled "Oleomargarine Discriminated Against"—is a true expression of the opinion held by all Minnesota physicians.

Minnesota has traditionally ranked high among other states for the general level of good health enjoyed by its citizens. Part of the credit for this excellent record devolves on the extraordinary nutritional facilities offered by this state. Physicians have tried to do their part in urging an appreciation of natural food values, pointing out to the public that adequate quantities of such basic foods as milk, eggs, butter, meat—to cite a few examples—will go far toward building up health defenses.

When we have done so well with utilizing natural foods, it seems pointless to urge the substitution of synthetic foods in the diet. Agitation for oleomargarine reminds me of the sales talk a customer gets in an understocked store, where the customer is denied his choice of purchase, and merchandise described as "just as good" is urged upon him. Fortunately, Minnesota's rich farm lands provide us with the merchandise of our choice and there is no reason for us to be content with substitute, "just as good" products.

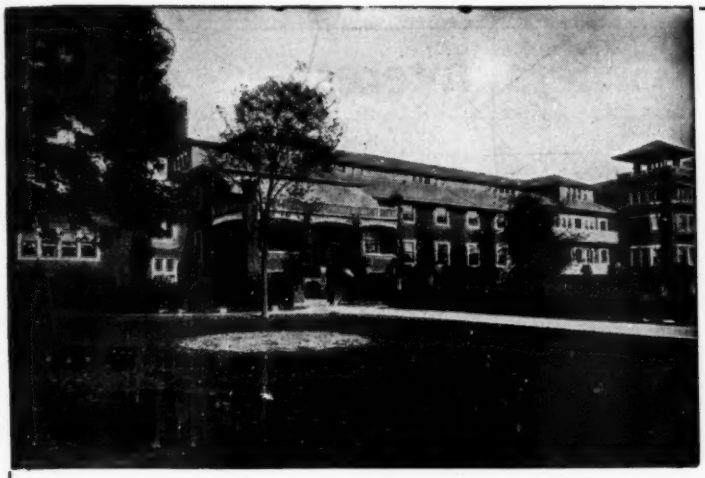
Good nutrition, the well-developed economy of our dairy state, our own tastes for wholesome, natural foods —these are served by the production of butter.

If the oleomargarine interests want to urge a butter substitute on American consumers, or if the people, themselves, demand it—that is a different matter. But I do not believe that it is the duty of physicians to campaign for a butter substitute when there is an abundance of the real thing available.

A physician has a right to compare, in print, the nutritional qualities of butter and oleomargarine, but I do not think that this editorial should have been offered to readers of MINNESOTA MEDICINE as the expressed opinion of all Minnesota doctors until it was proved to contain the opinion of all Minnesota doctors. Certainly it is not my opinion, nor the opinion of many physicians with whom I have discussed the matter since publication of the article.

August 24, 1951 F. J. ELIAS, M.D.

EDITOR'S NOTE: The reader's attention is called to the fact that editorials published in MINNESOTA MEDICINE never purport to be the opinion of members of the Minnesota State Medical Association nor of all Minnesota doctors. They voice the opinion of the writer, who may be either the Editor or some other person, in which case the name or initials of the writer are usually appended.



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Of General Interest

The Medical School of the University of Minnesota received for research purposes during the fiscal year 1949-1950, a total of $1,320,485. Of this amount, $862,141 was received from the United States Government, $75,000 from the Legislature of the State of Minnesota, and $383,344 from private sources.

* * *

Dr. M. J. Shapiro, formerly of Minneapolis, has announced the opening of offices for the practice of internal medicine at 405 North Bedford Drive, Beverly Hills, California. He is specializing in diseases of the heart.

Formerly associated with Dr. Shapiro, **Dr. R. J. Weisberg** has announced that he is continuing Dr. Shapiro's practice, occupying the same offices which they formerly shared at 620 Medical Arts Building, Minneapolis.

* * *

Dr. John H. Allen, formerly of Saint Paul, became associated with **Dr. L. G. Smith** of Montevideo on July 1 for the general practice of medicine and surgery. Dr. Allen was a graduate of the University of Minnesota Medical School in 1950 and recently completed his internship at Ancker Hospital, Saint Paul.

* * *

Dr. Fred L. Bregel, St. James, escaped with only a few scratches when his car left the highway near St. James late in July and overturned in a ditch.

* * *

Formerly of Saint Paul, **Dr. John C. Brown** has retired from the practice of medicine and has moved to Los Gatos, California, where his son, Dr. Gordon A. Brown, is now practicing.

* * *

A Federal Trade Commission ruling against the makers of "Ovaltine" requires that the product no longer be advertised as correcting nutritional deficiencies, anemia or deficiency diseases or developing endurance, strength, stamina, energy or muscles, or that "Ovaltine" is needed in addition to a well-planned or well-balanced diet.

* * *

Dr. Franklin Neva, a former resident of Cloquet and a graduate of the University of Minnesota Medical School, has received a two-year fellowship in Boston from the National Foundation for Infantile Paralysis. Dr. Neva interned at Boston City Hospital, then served in the Navy, stationed at Cairo, Egypt, where he did research on typhoid and paratyphoid fever. Before receiving the infantile paralysis fellowship, he did research work at Harvard for the American Medical Research Foundation.

* * *

After three years of association with the Bemidji Clinic, **Dr. Kenneth J. Johnson** left late in July to accept a position with the Quain and Ramstad Clinic in Bismarck, North Dakota. Dr. Johnson will specialize in the practice of internal medicine.

* * *

Dr. John H. Rosenow announced on September 1 the opening of offices at 1818 Medical Arts Building, Minneapolis, for the practice of general surgery.

* * *

After returning from more than two years of service in the Army, of which twelve months were spent in Korea, **Dr. Thomas S. Kemp** of Mankato, has been awarded a three-year fellowship at the University of Pennsylvania Hospital, Philadelphia. Dr. Kemp was sent to Korea from Japan about three weeks after the war broke out, and he spent a year working in a mobile surgical hospital directly behind the fluctuating front.

* * *

Dr. Herbert W. Johnson has opened an office at 755 Lowry Medical Arts Building, Saint Paul, for the practice of internal medicine with the subspecialty of endocrinology and diabetes. A graduate of the University of Minnesota Medical School in 1945, Dr. Johnson interned at Minneapolis General Hospital and served in the Army before taking a fellowship at the Mayo Foundation. He began practice in Saint Paul on July 1, 1951.

* * *

A revised catalogue of motion pictures available through the Committee on Medical Motion Pictures and a revised list of "Sources of Motion Pictures on Health" can now be obtained. The catalogue lists sixty-two available 16 mm. films, most of which are at the professional level. Fourteen are suitable for showing to lay groups. The newly revised list includes addresses of major loan and rental film libraries, state health departments' film libraries and references to printed lists. Both the catalogue and the list are available from the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

* * *

After July 15, **Dr. H. P. Wendt,** who had been associated with the Johnson Clinic at Thief River Falls, established his own office in temporary quarters in the city. He announced that he planned to move into newly remodeled offices in the fall.

* * *

Dr. Alfred Sherman, formerly with the Veterans Hospital, Minneapolis, has moved to Albert Lea and has become associated in practice with a clinic there.

* * *

A testimonial dinner honoring **Dr. John D. Camp,** Rochester, was given by the Minnesota and North Dakota Radiological Societies in Saint Paul on July 21. Dr. Camp, it was announced, was leaving Minnesota to go into private practice at Los Angeles, California.

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The American Cancer Society, in its annual report, indicated, among others, the following allocations of funds: Memorial Center, New York, $397,026; University of Chicago, $309,171; Columbia University, $203,574; Harvard University, $191,305; Institute for Cancer Research, Pennsylvania, $184,923; Massachusetts General Hospital, $114,480, and University of Minnesota, $109,582.

* * *

Dr. Harold A. Kaplan, formerly of the Veterans Hospital, Minneapolis, has opened offices for the practice of internal medicine at 2945 Dakota Avenue, St. Louis Park (Minneapolis suburb).

Dr. O. B. Fesenmaier, New Ulm, discussed the use of hypnosis in medical practice at a meeting of the Junior Chamber of Commerce in New Ulm on August 13.

* * *

The official opening of a new clinic in Virginia and a change in its official title to the **East Range Clinic** were announced on July 31. The new clinic building, which at the time of the announcement had been in use for several weeks, was formrly known as the Ewens-Malmstrom Clinic. The clinic is under the control of More-Ewens Clinic, Inc., which also operates the More-Ewens Clinic in Eveleth in conjunction with the More Hospital.

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If no answer call: 222 Exeter Pl., Ne. 1291

Following a wedding trip in northern Minnesota, **Dr. and Mrs. Charles D. Knight** (Dorothy Corinne Willius) have made their home in Rochester, where they were married this summer. Mrs. Knight is the daughter of Dr. and Mrs. Fredrick A. Willius of Rochester. Dr. Knight, who completed a three-year fellowship in surgery at the Mayo Foundation, has begun a first assistantship in surgery at the Mayo Clinic.

* * *

The House of Representatives by a 318 to 45 vote overrode President Truman's veto of **H.R. 3193,** providing increased pensions for disabled veterans requiring attendance of other persons, including nurses. The bill applies only to disabled veterans whose disability is not service connected. The President, in vetoing the measure reiterated his opposition to any new legislation giving assistance for non-service disabilities. Before overriding the veto, the House received a report from its Veterans Affairs Committee unanimously advocating such a step. The President is to be congratulated on vetoing this bill. This legislation is another example of handouts for special groups with sufficient political pressure.

The House of Representatives Appropriation Committee has cut Civil Defense Administration's 1952 budget request for $535 million by 88 per cent, to $65,255,000. National Science Foundation's $14 million request was cut by 98 per cent, to $300,000. A Bureau of Narcotics' request for $400,000 to hire thirty-two more agents was cut by 40 per cent, to $250,000.

* * *

Dr. F. M. McCarten and **Dr. R. E. Carlson** opened new offices in the Cosmopolitan Bank Building in Stillwater on August 20. The offices comprise seventeen separate rooms, including a reception room, three private offices, two examining rooms, x-ray laboratory, metabolism and electrocardiograph room, laboratory, diathermy room and two rooms set aside for infants. The attractive exterior is done in Los Rancho brick and redwood in natural finish.

* * *

Dr. A. L. Arends has moved from Cokato and has opened offices for the practice of medicine at 620 Sixty-sixth Street South, Minneapolis.

* * *

When **Dr. John V. Carlson** and his bride, the former Olivia Kjelland, returned to Westbrook late in July, following their marriage in Valley City, North Dakota, residents of the city and the surrounding countryside gathered to welcome the couple. Dr. and Mrs. Carlson were taken on a parade through the town, after which they were serenaded at a special band concert.

* * *

Dr. John W. Schut, of the division of neurology at the University of Minnesota Hospitals, has joined the staff of the Anoka State Hospital and will begin work there on October 1.

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Dr. John D. Tobin, Minneapolis, has been elected a fellow of the American Academy of Pediatrics.

* * *

Dr. William L. Benedict, Rochester, has been notified that he will be given an honorary life fellowship in the American Academy of Optometry. The award will be presented on December 10 at the organization's annual meeting in New York. Dr. Benedict, who retired in March, 1950, as head of the section on ophthalmology at the Mayo Clinic, will be the fifth man so honored in the twenty-year history of the optometry group.

* * *

It was announced in Wabasha on July 20 that **Dr. R. F. Meincke,** who had just completed his internship at General Hospital, Minneapolis, was making arrangements to begin his practice at North Bend, Oregon.

* * *

Dr. J. E. Indihar became a staff member of the Shipman Hospital at Ely on July 16. A graduate of the University of Minnesota Medical School, Dr. Indihar served his internship at St. Mary's Hospital, Duluth.

* * *

Dr. **Oscar Kozberg,** formerly of Little Rock, Arkansas, returned to the Moose Lake State Hospital as assistant superintendent on August 1. He was a member of the staff from 1938 to 1941, when he entered military service. After leaving the armed forces, he became superintendent of a state hospital at Little Rock.

* * *

Dr. R. E. Anderson, a physician at Willmar for the past thirty years, has sold his practice to **Dr. Lawrence J. Opsahl,** formerly of Saint Paul. Dr. Anderson announced that he planned to move to Rock Island, Illinois.

Dr. Opsahl, a graduate of the University of Minnesota Medical School, interned at Minneapolis General Hospital, completed a residency at the Northern Pacific Hospital, Saint Paul, and served in the Navy for more than three years.

* * *

Dr. Philip Hursh, after two years of association in practice with Dr. Hugh D. Patterson in Slayton, announced on August 16 that he planned to leave on September 5 to become a staff member of the University of Minnesota Health Service.

A graduate of the University of Minnesota Medical School in 1943, Dr. Hursh interned at Queen's Hospital, Hawaii, and then served in the Army in the Pacific Theater. Following his military service, he took a year of postgraduate training at Asbury Hospital, Minneapolis. He then worked at the University Health Service before moving to Slayton in July, 1949.

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Surgical Technic, Surgical Anatomy and Clinical Surgery, four weeks, starting October 8, November 5.
Surgical Anatomy and Clinical Surgery, two weeks, starting September 24, October 22, November 19.
Surgery of Colon and Rectum, one week, starting September 17, October 15.
Esophageal Surgery, one week, starting October 15.
Thoracic Surgery, one week, starting October 8.
Gallbladder Surgery, ten hours, starting October 22.
Breast and Thyroid Surgery, one week, starting October 1.
General Surgery, one week, starting October 1.
Fractures and Traumatic Surgery, two weeks, starting October 8.

GYNECOLOGY—Intensive Course, two weeks, starting September 24, October 22.
Vaginal Approach to Pelvic Surgery, one week, starting September 17, November 5.

OBSTETRICS—Intensive Course, two weeks, starting November 5.

MEDICINE—Intensive General Course, two weeks, starting October 1.
Gastroenterology, two weeks, starting October 15.
Electrocardiography and Heart Disease, two weeks starting October 22.

UROLOGY—Intensive Course, two weeks, starting September 24.
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It was announced on August 16 that **Dr. L. L. Kallestad** planned to move from Brownton and establish a private practice at Wayzata. Dr. Kallestad went into partnership with Dr. A. M. Jensen in the Brownton Clinic in June, 1946.

* * *

Approximately seventy persons attended a meeting of the East Central Minnesota Medical Society on August 3 at which newspaper editors of the area were special guests. **Dr. Edmund Miller,** superintendent of the Anoka State Hospital and president of the society, presided. Among the speakers at the business session were Arch G. Pease, publisher of the *Anoka Union,* and Manley Brist, attorney for the Minnesota State Medical Association. The discussion centered primarily on the position of doctors and newspapermen in regard to the publishing of information about patients, principally in the case of accidents.

* * *

It was announced on August 9 that **Dr. Raymond W. Dowidat** had terminated his practice in Richfield and planned to leave shortly for duty with the U. S. Public Health Service in the Pacific. He expected to be stationed on the island of Saipan. Dr. Dowidat had practiced in Richfield since March, 1946. His practice has been taken over by **Dr. A. L. Arends,** formerly of Cokato.

* * *

Dr. Walter J. Doswell, after twenty-five years of practice in Kerkhoven, retired from active practice early in August.

A graduate of Marquette Medical College, Milwaukee, Wisconsin, in 1912, Dr. Doswell practiced in Wisconsin, North Dakota and Montana until the outbreak of World War I, in which he served in the medical branch of the Canadian army. After the war he took postgraduate training in ophthalmology and otolaryngology at Chicago and then practiced in Benson until 1926, when he moved to Kerkhoven. Always active in civic affairs, he served on the school board for ten years and was mayor of Kerkhoven for almost as many years.

* * *

At Lake Crystal a new clinic building has been constructed and will be staffed by two brothers, **Dr. Paul M. Smith,** and **Dr. Harry J. Smith.** Dr. Paul Smith has been associated in practice with **Dr. F. W. Franchere** at Lake Crystal since 1946. Dr. Harry Smith, a graduate of the University of Minnesota Medical School, recently completed his internship at the Milwaukee County Hospital, Wisconsin.

* * *

Venereal disease in Minneapolis has been brought under such effective control that the health department clinic there has been closed. The city is now maintaining a venereal disease clinic only at General Hospital. Since 1942 there has not been a single case of congenital syphilis although there have been more than 100,000 city births in that period.

* * *

Dr. Bernette G. Nelson, after five years of practice at Menahga, has moved to Richfield and opened a

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new practice there. Dr. Nelson is a graduate of the University of Minnesota Medical School.

* * *

Dr. Einer Wesley Johnson and Miss Nell Marie George were married at Colorado Springs, Colorado, on July 21. Following a wedding trip to Canada, they are now making their home at Rochester. Dr. Johnson, a graduate of the University of Minnesota Medical School, has completed a fellowship at the Mayo Foundation and has practiced with the Colorado Springs Medical Center.

* * *

Dr. Robert Pierce, formerly of Wadena, has moved to Renville and has become associated in practice with **Dr. D. C. Anderson** of Danube. Prior to the move, Dr. Pierce was associated in practice with his father, **Dr. Charles H. Pierce,** in Wadena.

* * *

It was announced on July 26 that **Dr. E. C. Burseth** of Forest Lake was planning to move to Mora as soon as housing could be arranged.

* * *

Between 2,000 and 3,000 persons gathered at Parkers Prairie on July 22 to pay tribute to **Dr. and Mrs. H. H. Leibold** and to congratulate them on their forty-two years of service to the community and surrounding area.

The celebration began with a parade through the city streets, followed by a commemorative program at the high school auditorium, the unveiling of a plaque at the local hospital, and a banquet in the evening. Among the speakers at the program were **Dr. H. L. Stemsrud,** Alexandria, and Mr. Val Bjornson, state treasurer.

* * *

HOSPITAL NEWS

Dr. J. J. Smyth, Lester Prairie, was elected president of the **Glencoe Municipal Hospital** staff in July. He succeeded Dr. Grant Griebe, Norwood, who had been called into military service. Dr. Smyth has practiced at Lester Prairie since August, 1948.

* * *

The **Littlefork Hosptial,** a twenty-two bed institution, was made the property of the village of Littlefork at a meeting of the Littlefork Hospital Association, Inc., in July. The hospital is continuing to function as a general hospital with Dr. R. A. MacDonald as administrator. The association, a nonprofit organization, is operating the hospital for the village.

* * *

A building fund drive for **Immanuel Hospital** in Mankato began officially on July 19 at a "kick-off" dinner attended by 600 volunteer workers. Principal speaker at the dinner was Dr. Charles A. Haney of Boston. The drive started with a backlog of $105,000 in advance gifts. Goal of the campaign was $350,000.

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TRIBUTE PAID BERTRAM ADAMS

At the testimonial dinner tendered Dr. Bertram Adams by the Chamber of Commerce of Hibbing at the Androy Hotel in May, 1951, some 100 guests included physicians from the different Range communities. Dr. T. A. Estrem of Hibbing acted as Master of Ceremonies, and George Fisher, president of the Chamber of Commerce, extended the official welcome and presented a gift to the guest of honor.

Dr. Owen W. Parker, formerly of Ely and now residing in Duluth, having been a classmate of Dr. Adams at the University of Minnesota, was invited to be the speaker but being unable to attend, he wrote the following tribute which appeared in the column of the *Hibbing Tribune*, "Along the Iron Range" in the issues of June 22 and 23:

The occasion of this testimonial is, of course, to give recognition of the honor conferred on Dr. Adams recently by the State Medical Association at Rochester when he was admitted to membership in the Fifty Club of the State Medical Association. This is a great honor, and few men are privileged to live so long, and give so great a length of service in medicine as this honor indicates. I know of no doctor more worthy than Dr. Adams to receive this honor, and I have probably known him longer than any one of you. My acquaintance dates back to about 1898, when we were both medical students at the University. I take it that neither one of us was blessed with an abundance of money to get through school, and that in the common vernacular we started from "scratch." Have you ever experienced the recalling of pictures that hang on "memories walls," some ordinary and, some extraordinary things that you never forget. Well, one of these pictures that I recall is seeing Dr. Adams swinging down the street in stride throwing papers with excellent aim onto the porches of the customers of his paper route; and I envied him in the job he had and the money I was sure he was making. I had tried to get a route myself, but "no dice."

There are many other things I have envied in Dr. Adams. One is his name—one of the most distinguished family names in America. No family has carried on through the generations in America with such distinction continuously. Is that the reason that Bert Adams is so good—his name? But Shakespeare said "What's in a name? A rose by any other name would smell as sweet." Then I have envied him the luck he had in getting started in Hibbing in the early days. Bert was in Biwabik with the late Dr. Charles Bray, and I was at the Soudan hospital with the late Dr. William W. Richardson. For some reason Bert decided to quit the Range, to go to Minneapolis, open an office and enter private practice in the great mill city; and who could blame him in this ambition? I, myself, intended to stay on the Range only a year or two, and then locate in Minneapolis, if possible.

Bert has told me this story himself. He opened an office in Minneapolis and waited two or three weeks. Not a patient crossed his office door, but the wolf was entering. About that time he received a call to come to Hibbing as surgeon for some mining company. What a piece of luck. Who could not be successful once having gotten on the ground floor of the wonderful Hibbing district, the "Iron Ore Capital"—one of the most wonderful, interesting, and stimulating places in the world throughout its marvelous growth and development and its people. How fortunate to have lived with such people through the years. The mere contact with them in their varied positions and places would stimulate one to his best

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endeavors. But while he was lucky to have been brought to Hibbing, Hibbing was also lucky to have Adams. He would have been successful anywhere either in the smallest hamlet or the great city. I am sure had he remained in Minneapolis, thousands of patients would eventually have crossed his office doors for he has the integrity, the intellectual honesty, the thrift, the ability and strength and toughness of physique and character to stand the work and strain of private practice to have made him in any place the good doctor.

Under our free system of medicine in America, such men as Dr. Adams are developed. We do not want to change this system. Although I am a doctor myself, I, like most people, want to choose my own physician no matter who he may be. He must be and is my family doctor, and no matter to how many doctor specialists he may send me for special examination he is still my doctor to whom I may feel free to go for either trivial or great questions or advice on medical and other things. Such a family counselor I am sure Dr. Adams has been to thousands of patients despite whatever special attainments he has acquired in surgery or other specialties. I shall never forget the great confidence my grandfather had in his old family country doctor. If the doctor came it helped, whether he gave medicine or not. Such a patient-physician relationship is truly inspiring. It is a part of freedom and must not be brushed aside in our modern trends.

I have always felt that the Iron Range communities of Northern Minnesota were particularly fortunate in having such a fine type of pioneer doctors. Only to mention some of their names corroborates this conviction. Dr. Harwood and Dr. William Richardson of Soudan, Dr. Chas. G. Shipman of Ely, Dr. Chas. Bray of Biwabik, Dr. Chas. W. Moore of Eveleth, Dr. Chas. Lemont of Virginia, Dr. Albert Shaw of Buhl, Dr. Dana Rood, Dr. Blacklock, and Dr. Bullen, and Dr. Bertram Adams of Hibbing. I have never seen a finer group of doctors or men. Fifty years is a long span. If we go back fifty years from 1901 when Dr. Adams started practice, we are in the year 1851; seven years before Minnesota became a state; ten years before the beginning of the war between the states; ..... paper that year.

When I entered Medical School in 1896, ether had been used as an anesthetic just fifty years. We at the Medical School celebrated the fiftieth anniversary of its administration in October, 1846, at the old Massachusetts General hospital. Dr. Burnside Foster of Saint Paul, Dr. Adams will remember, made a brilliant and eloquent address describing the event in the old ether room which is still preserved. It made a great impression on me. Fifty years back seemed in the dark ages at that youthful period of life, but now how quickly these fifty years have passed. Dr. Adams, in his fifty years, has seen and taken part in a most marvelous advance in medicine. No period in the history of the world has been equal to it in medical, scientific and humane achievement. We old doctors could well wish to be young again and start another fifty years of medicine beginning it as medicine is today with its superior powers to cure and do good, compared to the day that Dr. Adams started in 1901.

We might well wish with Dr. Oliver Wendell Holmes, author poet, medical doctor, teacher of anatomy at Harvard University, father of the great Judge Oliver Wendell Holmes, in his poem:

"Oh, for an hour of boyhood joy,
Give me back my twentieth spring
I'd rather laugh a bright-haired boy
Than reign a gray-beard king.
Off with the wrinkled spoils of time,
Away with learning's crown,
Tear out life's wisdom-written page
And dash its trophies down."

And then appeared the angel and promised to restore him back to his youth and twentieth spring, in the twinkle of an eye, but he must give up all things dear to him through life, and most of all his wife and children. No, he could not do this—he must take them with him in the backward flight to "Boyhood Joy." The angel took a sapphire pen and wrote in rainbow dew, "Ah, this will never do. The man would be a boy again, and be a husband, too." Again the angel wrote with sapphire pen, "Ah, this will never do, the man would be a boy again and a father, too." The old man awoke from his dream, happy that he still had his adorable wife and wonderful boys and girls—happy that he had not given them up to return to his youth. Much good philosophy is expressed in beautiful poetic language, in the poem. We cannot and will not retrace our steps and go back to youth if we have to sacrifice the most valuable and cherished possessions of our life, wife, children, friends and associates.

I have no doubt that when Dr. Adams graduated in 1901 fifty years was so far beyond the horizon of his thought that it was not even contemplated. No doubt he now wonders where those golden years have gone. The title of a famous book tells it, "Gone With the Wind," and I imagine he is thinking in words like these "The sands of time move slowly but surely," and here I am at the 20th century mark before I knew it. I would like to celebrate again in fifty years, but the shadows lengthen toward the east, the purple hills are just beyond, and I am happy and proud to have reached this day, and humble and thankful, too. If I mistake not my spirit, I still wish to be of service and help to my fellow man, and I wish to be ever forward looking until the summons comes to "join the innumerable caravan that leads to that mysterious realm."

And so again I envy Dr. Adams in his long life of useful and successful practice of medicine in his full social, civic, fraternal and religious life. He has been highly honored many times before, having held many offices of trust in the medical profession, amongst them, president of the State Medical Association. General MacArthur, in closing his address to Congress said, "Old soldiers never die, they just fade away." So we here join the sentiment and change the words to "Old doctors like Dr. Adams never die, they just fade away," and with blessings on him always.

BLUE CROSS-BLUE SHIELD NEWS

Effective August 1, 1951, Blue Shield surgical and obstetrical benefits for both employes and dependents will be added to the present Blue Cross hospitalization benefits for employes and dependents of the U. S. Steel and its subsidiaries.

The adding of Blue Shield surgical and obstetrical benefits to the Blue Cross hospital benefits was agreed upon between the United States Steel Corporation and its subsidiary companies, and the United Steelworkers of America, C.I.O. The request was made to make this coverage effective August 1, 1951. The Board of Directors of Minnesota Medical Service were required to act speedily after conferring with members of the medical profession; therefore, it has not been possible to send to every participating doctor of medicine in Minnesota the details or the schedule of payments to doctors regarding this coverage. The schedule of payments to doctors is now being printed together with other information which will be sent out as early as possible.

Every employe of the United States Steel and its subsidiaries has been given an identification card as of August 1, 1951. On this card the word "Special" is imprinted to identify the employes of this group. Until the printed schedule of payments and other information regarding the coverage of this group are ready for distribution, Doctors of Medicine are requested to submit their claim to the Minnesota Medical Service Inc., and the amount of the schedule fee will be furnished him. The participant subscriber is required to pay the charges, if any, above the amount listed in the surgical fee schedule.

It is estimated that one-half million individuals, including dependents of employes of United States Steel and their subsidiaries will be covered throughout the United States. Payment will be provided in varying amounts according to the type of operation, up to a maximum of $200.00 for surgery performed in the hospital, at home or in the doctor's office, in cases of non-occupational sickness or injury. This plan covered 33,465 U. S. Steel employes and dependents in Minnesota as of August 1, 1951.

The semi-annual report of Minnesota Medical Service Inc., shows that Minnesota Blue Shield enrollment has increased to 464,169 as of June 30, 1951, compared to the total enrollment for the preceding year of 360,029. Seventy-seven Blue Shield Plans now serve more than 20,000,000 subscribers in the United States, Hawaii and Puerto Rico. For the past few years, enrollment in these Plans has increased at the rate of 1,000,000 members every three months. It is estimated that 28,000 new subscribers join Blue Shield every working day of the year.

Minnesota Blue Shield payments to doctors for the first six months of 1951 totalled $1,494,299 compared to $954,685 for the same period of 1950. Last year, nationally, the Blue Shield Plans paid doctors approximately $139,000,000 for care of Blue Shield subscribers.

Blue Cross enrollment as of June 30, 1951, totalled 1,034,002. Eighty-three Blue Cross plans now serve more than 41 million subscribers in the United States, Canada and Puerto Rico. Combined, the two plans, Blue Cross and Blue Shield, provide a comprehensive program to meet costs of unexpected illness or accident.

Hospitalization expense during June totalled $910,495. To date this year, hospitalization expense totals $5,729,228. The net administrative expense for the first six months of 1951 was 8.6 per cent of cash earned income.

On Friday, August 10, 1951, the cornerstone of the new Blue Cross-Blue Shield building located at University and Curfew Street, Saint Paul, just one block east of the city limits, was laid. The cornerstone laying ceremony was preceded by a noon luncheon at the Town and Country Club, Saint Paul, with David E. Bronson, Minneapolis attorney and president of the Blue Cross Board of Trustees, presiding. Minnesota Senator Harry L. Wahlstrand, Blue Cross-Blue Shield director of public education, spoke during the luncheon and Victor M. Anderson, superintendent of Abbott Hospital, Minneapolis, and chairman of the Blue Cross-Blue Shield Building Committee, gave a report on his committee.

Additional speakers during the luncheon meeting were Rev. L. B. Benson, administrator of Bethesda Hospital, Saint Paul, and vice president of the Blue Cross Board

of Trustees; Dr. O. I. Sohlberg, president of the Blue Shield Board of Directors; Dr. Peter D. Ward, administrator of Miller Hospital, Saint Paul, and secretary and past president of the Blue Cross Board of Trustees; Dr. R. R. Cranmer, vice president of the Blue Shield Board of Directors; and Arthur M. Calvin, executive director of Blue Cross and Blue Shield.

Officiating at the cornerstone laying were David E. Bronson, president of the Blue Cross Board of Trustees and Victor M. Anderson, Blue Cross Board member and chairman of the Building Committee, along with other members of the Blue Cross and Blue Shield Boards, the executive director, building contractors and guests.

AT THE CORNERSTONE LAYING CEREMONY

Pictured left to right, *front row* are: Victor Anderson, superintendent of Abbott Hospital, Minneapolis, handing trowel to Dave Bronson, Minneapolis attorney. Kneeling are Dr. Olaf I. Sohlberg, Saint Paul, president of the Blue Shield Board of Directors; Dr. R. R. Cranmer, Minneapolis, vice president of the Blue Shield Board of Directors, and Arthur M. Calvin, executive director of the Minnesota Blue Cross-Blue Shield Plans. Standing *back row,* Paul Schorr, Commonwealth Electric Company; William Riedel, secretary-treasurer of Sanitary Farm Dairies, Inc., Saint Paul, member Blue Cross Board of Trustees; Rev. L. B. Benson, vice-president of the Blue Cross Board of Trustees, superintendent, Bethesda Hospital, Saint Paul; Mr. Ray K. Swanson, member Blue Cross Board of Trustees, Superintendent Swedish Hospital, Minneapolis; Mr. C. W. Hildreth, Austin, member, Blue Cross Board of Trustees; Mr. Harry E. Kern, assistant treasurer and vice president of the First National Bank, Saint Paul and member Blue Cross Board of Trustees; Mr. Thomas F. Wallace, chairman of the Board of Farmers and Mechanics Bank, Minneapolis, member Blue Cross Board of Trustees, Dr. Peter D. Ward, Secretary of the Blue Cross Board of Trustees, and Superintendent of Miller Hospital, Saint Paul; Mr. Abbott L. Fletcher, Counsel and Minneapolis attorney, Dr. L. L. Sogge, Windom, member Blue Shield Board of Directors, Dr. Edwin J. Simons, Minneapolis, medical director of Blue Shield and Dr. C. A. McKinlay, Minneapolis, secretary Blue Shield Board of Directors.

(Inset) Officiating at the cornerstone laying of the new Blue Cross-Blue Shield building are: *(left)* Dave Bronson, president of the Blue Cross Board of Trustees, *(right)* Victor Anderson, chairman of the building committee.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

LET'S HAVE HEALTHY CHILDREN. Adelle Davis, A.B., M.S., Consulting Nutritionist. 314 pages. Illus. Price $3.00, cloth. New York: Harcourt, Brace & Co., 1951.

LET'S COOK IT RIGHT—Good Health Comes from Good Cooking. Adelle Davis, B.A., M.S. 626 pages. Illus. Price $3.00, cloth. New York: Harcourt, Brace & Co., 1947.

THE ODYSSEY OF MODERN DRUG RESEARCH. Robert Burlingham. 124 pages. Illus. Cloth Bound. Kalamazoo, Michigan: The Upjohn Co., 1951.

TOBACCO AND THE CARDIOVASCULAR SYSTEM. Grace M. Roth, Ph.D. Associate Professor of Experimental Medicine, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, and Consultant in Section on Physiology, Mayo Clinic, Rochester, Minnesota. 66 pages. Illus. Price $2.25, flexible binding. Springfield, Illinois: Charles C. Thomas, 1951.

THE MANAGEMENT OF FRACTURES, DISLOCATIONS AND SPRAINS. Fifth Edition. John Albert Key, B.S., M.D. Clinical Professor of Orthopedic Surgery, Washington University School of Medicine; Associate Surgeon Barnes, Children's and Jewish Hospitals; and H. Earle Conwell, M.D., F.A.C.S., Associate Professor of Orthopedic Surgery, University of Alabama School of Medicine, Chief of Orthopaedic Service, South Highland Infirmary, Consulting Orthopaedic Surgeon to Carraway Methodist Hospital and Baptist Hospitals, Attending Orthopaedic Surgeon, Children's Hospital, Jefferson-Hillman Hospital, East End Memorial Hospital, and St. Vincent's Hospital, Birmingham, Alabama. 1232 pages. Illus. Price $16.00, cloth. St. Louis: C. V. Mosby Co., 1951.

SURGERY OF THE STOMACH AND DUODENUM. Claude E. Welch, M.D. Associate Visiting Surgeon, Massachusetts General Hospital; Clinical Associate in Surgery, Harvard Medical School. 349 pages. Illus. Price $8.50, cloth. Chicago: Year Book Publishers, 1951.

TECHNICAL METHODS FOR THE TECHNICIAN. Fourth Edition. Anson Lee Brown, B.A., M.D., President of Anson L. Brown, Inc. 784 pages. Illus. Price $10.00, flexible binding. Columbus, Ohio: Anson L. Brown, Inc., 1951.

DIAGNOSTIC PITFALLS IN CARDIOLOGY

(Continued from Page 859)

which it may be necessary to exclude before deciding that a given electrocardiogram means heart disease are almost endless. I am of the opinion that one should take only as many electrocardiograms as may be necessary to confirm or deny a pathologic condition. I am not speaking entirely seriously when I make the following recommendations, but one might say that to examine a patient properly with the electrocardiograph, one should make the following records: three standard, three unipolar limb and six unipolar precordial leads, taken in the following position: with the patient sitting, standing, lying on his back and on right and left sides, and before and after eating, before and after exercise, while he is hypnotized and after firing a gun off behind his head, and without considering permutations, this means 132 electrocardiograms on each subject. It is fortunate, indeed, that tracings can now be recorded immediately on paper without putting such a mass of records through photographic development.

Seriously, however, I would not ask you all to be electrocardiographers. In fact, I would pray that you would not be, but I do advise a spirit of skepticism because I have seen individuals not acceptable for life insurance when their electrocardiograms were recorded in the recumbent position who became eligible when they stood up, and we must always remember the neurogenic factors in this diagnostic method.

I have given you somewhat random thoughts on some of the pitfalls into which I have fallen in the past thirty years with the hope that it may help you in avoiding them. I hope that none of us will diagnose heart disease when it is not present, because if the patient did not have heart disease before we saw him, he certainly will after we get through.

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